



**Verified Carbon  
Standard**

## 4<sup>TH</sup> MONITORING REPORT: RECIPE FOR CHANGE GROUPED PROJECT

# wonderbag.

|                             |                                                  |
|-----------------------------|--------------------------------------------------|
| Project title               | Recipe for Change Grouped Project                |
| Project ID                  | 2384                                             |
| Monitoring period           | 01-May-2023 to 31-July-2025, including both days |
| Original date of issue      | 17-December-2025                                 |
| Most recent date of issue   | 15-April-2026                                    |
| Version                     | 8                                                |
| <i>VCS Standard</i> Version | 4.7                                              |
| Prepared by                 | Promethium Carbon on behalf of Wonderbag UK Ltd  |

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# PROJECT DETAILS

## 1.1 Summary Description of the Implementation Status of the Project

This is the fourth monitoring report for the Recipe for Change Grouped Project, covering the period 1 May 2023 to 31 July 2025.

The Grouped Project consists of the adoption of the Wonderbag heat-retention cooking devices in kitchens throughout the Republic of South Africa.

The Grouped Project is managed by Wonderbag UK Limited. Wonderbags are produced in-house and also outsourced from other facilities.

The Wonderbags allow for slow-cooking of nutritious meals in an easy, safe and energy efficient manner. Wonderbags have health, social and environmental and climate benefits associated with reduced fuel consumption for cooking purposes. In particular, women and girls in South Africa are disproportionately burdened with the unpaid labour of collecting fuels and for the cooking of meals. Wonderbags save time, money and fuel when cooking, providing for the opportunity to use these resources in more productive ways such as pursuing education and employment opportunities.

Summary of the implemented activities: Nineteen Project Activity Instances, that contain a maximum of 20,000 bags each, were in operation under the Grouped Project during the monitoring period.

There were 355,930 Wonderbags active in the field and accounted for in this monitoring period. All of these Wonderbags were distributed in previous monitoring periods, meaning that no new Wonderbags are included in this fourth monitoring period.

Implementation dates: The Group Project and the first Recipe for Change (RfC) Project Activity Instance were initiated by a roll-out of Wonderbags on 15 March 2019. The total emission reductions from all the Project Activity Instances in the Group Project during the monitoring period are as follows:

### GHG emission reductions in this monitoring period:

| Year           | Total Emission Reductions (tCO <sub>2</sub> e) |
|----------------|------------------------------------------------|
| 2023           | 129,548                                        |
| 2024           | 193,113                                        |
| 2025           | 112,263                                        |
| <b>Total</b>   | <b>434,924</b>                                 |
| Annual Average | 192,889                                        |

|                                             |         |
|---------------------------------------------|---------|
| Achieved after adjustment for over-issuance | 403,302 |
|---------------------------------------------|---------|

## 1.2 Audit History

| Audit type                  | Period                                                         | Program | Validation/verification body name  | Number of years |
|-----------------------------|----------------------------------------------------------------|---------|------------------------------------|-----------------|
| Validation and verification | 1 <sup>st</sup> verification:<br>15-March-2019 – 31-March-2021 | VCS     | Carbon Check                       | 2.0             |
| Verification                | 2 <sup>nd</sup> verification:<br>01-April-2021 – 30-April-2022 | VCS     | TÜV SÜD South Asia Private Limited | 1.1             |
| Verification                | 3 <sup>rd</sup> verification:<br>01-May-2022 – 30-April-2023   | VCS     | Carbon Check                       | 1.0             |
| Verification                | 4 <sup>th</sup> verification:<br>01-May-2023 – 31-July-2025    | VCS     | Carbon Check                       | 2.3             |

## 1.3 Sectoral Scope and Project Type

|                             |                  |
|-----------------------------|------------------|
| Sectoral scope <sup>1</sup> | 3. Energy demand |
| Project activity type       | Grouped project  |

## 1.4 Project Proponent

|                   |                                                       |
|-------------------|-------------------------------------------------------|
| Organization name | Wonderbag UK                                          |
| Contact person    | Sarah Collins                                         |
| Title             | Chief Executive Officer                               |
| Address           | Estuary House, Sea Wall, Whitstable, England, CT5 1BX |
| Telephone         | +2782 340 5583                                        |
| Email             | sarah@wonderbagworld.com                              |

<sup>1</sup> Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

## 1.5 Other Entities Involved in the Project

|                     |                                                                                |
|---------------------|--------------------------------------------------------------------------------|
| Organization name   | Promethium Carbon                                                              |
| Role in the project | Development of VCS documentation; assistance in registration and verification  |
| Contact person      | Robbie Louw                                                                    |
| Title               | Director                                                                       |
| Address             | 1st Floor, Block 2, 32 Peter Place Bryanston, 2060, Johannesburg, South Africa |
| Telephone           | +27 11 706 8185                                                                |
| Email               | robbie@promethium.co.za                                                        |

## 1.6 Project Start Date

|                    |                                                                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project start date | 15-March-2019                                                                                                                                                          |
| Justification      | This is the date in 2019 on which Wonderbag undertook a series of distributions for this grouped project. It is therefore the date on which emission reductions began. |

## 1.7 Project Crediting Period

|                                                       |                                                                                                                                                                                                                                                     |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Crediting period                                      | <input checked="" type="checkbox"/> Seven years, twice renewable<br><input type="checkbox"/> Ten years, fixed<br><input type="checkbox"/> Other (state the selected crediting period and justify how it conforms with the VCS Program requirements) |
| Start and end date of first or fixed crediting period | 15-March-2019 to 14-March-2026                                                                                                                                                                                                                      |

## 1.8 Project Location

The Project Activity Instances are located across the Republic of South Africa, in each province, as shown in the following figure.



**Figure 1 Grouped Project Location**

The following are the GPS coordinates for the provinces:

- Western Cape: -32.42, 21.92
- Eastern Cape: -32.09, 26.40
- KwaZulu-Natal: -28.31, 30.92
- Mpumalanga: -25.56, 30.53
- Limpopo -23.29, 29.40
- North-West: -26.54, 25.31
- Gauteng: -26.14, 28.14
- Free State: -28.45, 26.80
- Northern Cape: -29.04, 21.86

The following table outlines the provinces, per Project Activity Instance, where Wonderbags have been distributed:

| Project Activity Instance                                                         | Province                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RfC1, RfC2, RfC3, RfC4, RfC5, RfC6, RfC7, RfC9, RfC10, RfC11, RfC12, RfC13, RfC14 | <ol style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Free State</li> <li>3. Gauteng</li> <li>4. KwaZulu Natal</li> <li>5. Limpopo</li> <li>6. Mpumalanga</li> <li>7. North West</li> <li>8. Northern Cape</li> <li>9. Western Cape</li> </ol> |
| RfC17                                                                             | <ol style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Gauteng</li> <li>3. KwaZulu Natal</li> <li>4. Limpopo</li> <li>5. Mpumalanga</li> <li>6. North West</li> <li>7. Northern Cape</li> <li>8. Western Cape</li> </ol>                        |
| RfC8                                                                              | <ol style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Free State</li> <li>3. Gauteng</li> <li>4. KwaZulu Natal</li> <li>5. Limpopo</li> <li>6. Mpumalanga</li> <li>7. Western Cape</li> </ol>                                                  |
| RfC15                                                                             | <ol style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Free State</li> <li>3. Gauteng</li> </ol>                                                                                                                                                |

| Project Activity Instance | Province                                                                                                                                                                                                         |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           | <ul style="list-style-type: none"> <li>4. KwaZulu Natal</li> <li>5. Mpumalanga</li> <li>6. North West</li> <li>7. Northern Cape</li> <li>8. Western Cape</li> </ul>                                              |
| RfC16                     | <ul style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Free State</li> <li>3. Gauteng</li> <li>4. KwaZulu Natal</li> <li>5. North West</li> <li>6. Northern Cape</li> <li>7. Western Cape</li> </ul> |
| RfC18                     | <ul style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Free State</li> <li>3. Gauteng</li> <li>4. KwaZulu Natal</li> <li>5. Northern Cape</li> <li>6. Western Cape</li> </ul>                        |
| RfC19                     | <ul style="list-style-type: none"> <li>1. Eastern Cape</li> <li>2. Gauteng</li> <li>3. KwaZulu Natal</li> <li>4. Limpopo</li> <li>5. Mpumalanga</li> <li>6. North West</li> <li>7. Western Cape</li> </ul>       |

## 1.9 Title and Reference of Methodology

| Type (methodology, tool or module). | Reference ID, if applicable | Title                                                                       | Version |
|-------------------------------------|-----------------------------|-----------------------------------------------------------------------------|---------|
| Methodology                         | AMS-II.C.                   | Demand-side energy efficiency activities for specific technologies          | 15.0    |
| Methodology                         | AMS-II.G.                   | Energy efficiency measures in thermal applications of non-renewable biomass | 11.1    |
| Tool                                | TOOL21                      | Demonstration of additionality of small-scale project activities            | 13.1    |
| Tool                                | TOOL30                      | Calculation of the fraction of non-renewable biomass                        | 03.0    |

## 1.10 Double Counting and Participation under Other GHG Programs

### 1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

*If yes, provide required evidence of no double issuance as outlined by the VCS Standard.*

### 1.10.2 Registration in Other GHG Programs

Was the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

*If yes, provide the registration number and all relevant details including the date of project inactivity in the other GHG program.<sup>2</sup>*

<sup>2</sup> The requirement to provide the date of project inactivity only applies to projects which request registration or crediting period renewal under the VCS Program on or after 1 January 2025.

## 1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

### 1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

*If yes, provide all required evidence of no double claiming as outlined by the VCS Standard.*

### 1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

☐ Yes ☒ No

*If yes, provide all required evidence of no double claiming as outlined by the VCS Standard.*

### 1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

*If yes:*

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

☐ Yes ☐ No

Not applicable to the grouped project.

*If yes:*

Has the project proponent(s) or authorized representative posted a public statement on their website saying, "Carbon credits may be issued through the Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities]."

☐ Yes ☐ No

Not applicable to the grouped project.

## 1.12 Sustainable Development Contributions

During this monitoring period, the project delivered SD contributions through continued operation of 355,930 Wonderbag heat-retention cooking devices across 19 Project Activity Instances in households throughout South Africa and ongoing manufacture of Wonderbags using recycled foam. Although no new Wonderbags or Project Activity Instances were added, their use reduced cooking time and household fuel expenditure, supported poverty reduction, local entrepreneurship, resource recovery and avoided GHG emissions and biomass combustion. These contributions correspond to the indicators in Table 1, and support South Africa's national sustainable development priorities. The SD impacts are monitored using Table 1 and further details and evidence are provided in Appendix 2.

Table 1: Sustainable Development Contributions

| Row number | SDG target | SDG indicator                                            | Net impact on SDG indicator        | Current project contributions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Contributions over project lifetime                                                                                                                                                            |
|------------|------------|----------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1)         | 1.0        | Reduced time (hours) spent on cooking, using a Wonderbag | Implemented activities to decrease | The use of Wonderbags for cooking reduces the amount of time used for both collecting cooking fuel, especially wood, and for cooking, compared to the baseline scenario. The baseline scenario is cooking without the use of a Wonderbag. This is a highly valued benefit for the household as fuel collectors, particularly when collecting wood, and cooks now add productive time to their working day. The value has only been monitored for electricity and this is the first monitoring period it has been quantified. A total of 75,213,612 hours were saved for electricity users in this monitoring period. This equates to 134 hours per household each year. | Since monitoring of this SD Impacts began in the current, fourth monitoring period, there has been a reduction in 75,213,612 hours of cooking specifically for users cooking with electricity. |

|    |      |                                                                                                    |                                    |                                                                                                                                                                                                |                                                                                                                                                                                                                                              |
|----|------|----------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2) | 1.0  | Reduced monetary (ZAR) spending on cooking fuels                                                   | Implemented activities to decrease | By supplying Wonderbags and the use thereof, there was a reduction in the requirements for using electricity and LPG cooking fuels and thus monetary spending as a result, of ZAR 725,800,121. | Since monitoring of SD impacts began for VCS, by supplying Wonderbags and the use thereof, there was a reduction in the requirements for using electricity and LPG cooking fuels and thus monetary spending as a result, of ZAR 958,232,450. |
| 3) | 1.0  | Reduction in poverty through provision of economic resources                                       | Implemented activities to decrease | Donations made to communities in need totalled ZAR 418,406.                                                                                                                                    | Since monitoring of SD impacts began for VCS, donations made to communities in need totalled ZAR 1,270,621.                                                                                                                                  |
| 4) | 8.0  | Number of entrepreneurs, champions/ data monitors that are created within the Wonderbag eco-system | Implemented activities to increase | 156 entrepreneurs were employed during the monitoring period.                                                                                                                                  | 683 entrepreneurs have been created since monitoring of this impact started on the project.                                                                                                                                                  |
| 5) | 12.0 | Tonnes of recycled foam used in the manufacturing of Wonderbags                                    | Implemented activities to increase | During the monitoring period, 82 tonnes of recycled foam was used for manufacturing Wonderbags.                                                                                                | Since monitoring of SD impacts began for VCS started, 191 tonnes of recycled foam have been used in the manufacturing of Wonderbags.                                                                                                         |

|    |      |                                                       |                                    |                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                             |
|----|------|-------------------------------------------------------|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6) | 13.0 | Tonnes of greenhouse gas emissions avoided or removed | Implemented activities to increase | <p>During the monitoring period, the total emission reductions for the project were calculated as 434,924 tCO<sub>2</sub>e. After adjusting the over issued ERs of 31,355 tCO<sub>2</sub>e during MP1-</p> <p>MP3 results in a total achieved reductions of 403,302 tCO<sub>2</sub>e.</p> | Since monitoring of SD impacts began for VCS, 893,487 tCO <sub>2</sub> e in emission reductions have been calculated.                                                                       |
| 7) | 15   | Tonnes of avoided biomass combustion                  | Implemented activities to increase | <p>The use of Wonderbags in communities has led to approximately 370,906 tonnes of avoided biomass use that would otherwise have been combusted.</p>                                                                                                                                      | Since monitoring of SD impacts began for VCS, the use of Wonderbags in communities has led to approximately 455,641 tonnes of avoided biomass use that would otherwise have been combusted. |

## 1.13 Commercially Sensitive Information

Not Applicable

# 2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

## 2.1 Stakeholder Engagement and Consultation

### 2.1.1 Stakeholder Identification

#### Stakeholder Identification

Local stakeholder consultations have been undertaken at the Grouped Project level.

Ongoing, local stakeholder consultations are key components of the Wonderbag operations. Local stakeholder consultations are undertaken prior to the distribution of bags in an area. As a first step, Wonderbag engages with **local community members, including municipal ward councillors and community leaders**, to identify appropriate end-users and develop the required distribution plans for the community rollout of Wonderbags.

Wonderbag and distribution partners (on behalf of Wonderbag) then undertake interactive training and activation (demonstration) sessions with community members who receive the Wonderbags. **Distribution partners are therefore also key stakeholders in the grouped project.** These sessions provide information on how to use and care for the Wonderbags as well as to engage with end users regarding queries that they may have in relation to the use of the Wonderbags.

Wonderbag identifies distribution partners through the company's extensive aid and development networks, which have been developed over the past decade through Wonderbag's involvement in South Africa's socio-economic development.

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                             | <p>Wonderbag's distribution partners, typically NGOs and other aid agencies, are typically responsible for identifying communities in which the Wonderbags are distributed.</p> <p><b>Community members who use the Wonderbags are therefore key stakeholders in the grouped project.</b> These communities are characterised by low-income and development levels that require humanitarian assistance.</p> <p><b>List of identified stakeholders:</b></p> <p>Due to South Africa's Personal Protection of Information Act (POPIA), the names of stakeholders may not be disclosed without their prior permission. The following stakeholders groups can broadly categorised as follows:</p> <ul style="list-style-type: none"> <li>• Local community members, including municipal ward councillors and community leaders;</li> <li>• Distribution partners, typically NGOs and other aid agencies and</li> <li>• End-users.</li> </ul> |
| Legal or customary tenure/access rights     | <p>Not applicable. The Recipe for Change Grouped Project entails the distribution of energy efficient heat retention devices. The grouped project does not require access to territories and resources, including collective and conflicting rights, held by stakeholders, Indigenous People (IPs), local communities (LCs), and customary rights holders.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Stakeholder diversity and changes over time | <p>The primary stakeholder group comprises lower income households across South Africa, inclusive of diverse cultural and ethnic backgrounds. Within this group there are variations in urban, peri-urban, rural dwellings and primary cooking fuel (electricity, LPG or biomass). Socio-economic variation is evident in household size, income stability and cooking fuel, while household roles often place women and girls in charge of cooking and fuel management. Cultural diversity influences cooking practices and meal types, which affects baseline fuel use and the frequency of prolonged simmering. Vulnerable sub-groups may include female-headed households, informal</p>                                                                                                                                                                                                                                              |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | <p>settlement residents, and households with infants, elderly persons or members with respiratory conditions.</p> <p>Stakeholder interactions are primarily between end-user households and community-based organisations. Wonderbag field facilitators and project staff engage with households during distribution and user training.</p> <p>No material change in the make-up of stakeholder groups is expected over time. Minor fluctuations may occur due to seasonal migration, local economic conditions or shifts in energy prices that influence fuel choices, but the stakeholder profile remains predominantly lower-income, culturally diverse households using a mix of fuels for daily cooking.</p>                                                                            |
| Expected changes in well-being | <p>Under the baseline, households would continue relying on electricity, LPG, and biomass for prolonged simmering resulting in sustained exposure to indoor air pollution and recurrent fuel expenditure. Ongoing fuelwood demand would also exert pressure on local ecosystem services through deforestation and associated biodiversity impacts. Expected changes in well-being include improved indoor air quality through reduced active cooking time and smoke exposure, together with lower household fuel spend and enhanced disposable income. These outcomes are consistently emphasised in Wonderbag's engagement activities and training materials. These changes support better health, financial resilience, and conservation of ecosystem services valued by stakeholders.</p> |
| Location of stakeholders       | <p>Wonderbags are distributed throughout South Africa to predominantly local communities and households in low income areas. The project area therefore includes the whole Republic of South Africa. Wonderbags are present in communities in rural, peri-urban and urban areas. There are no impacts predicted for areas outside the country as the project reduces fuel use in the household it is used in directly. This is unlikely to cause a greater availability of fuel in surrounding countries.</p>                                                                                                                                                                                                                                                                                |
| Location of resources          | <p>The project area encompasses the entirety of South Africa. Wonderbags are distributed to each individual household which will have access to fuel based on their surroundings.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Rural households are likely to have greater access to firewood and thus make use of this fuel than urban households. Households using LPG and electricity are also included in this monitoring period and these fuels are readily available in South Africa for stakeholders to access. The grouped project does not encroach or restrict access to these resources but results in reduced usage by the end user.

## 2.1.2 Stakeholder Consultation and Ongoing Communication

### Ongoing consultation

Ongoing, local stakeholder consultations are key components of the Wonderbag operations. Local stakeholder consultations are undertaken prior to the distribution of bags in an area. As a first step, Wonderbag engages with local community members, including municipal ward councilors and community leaders, to identify appropriate end-users and develop the required distribution plans for the community rollout of Wonderbags.

Wonderbag and distribution partners (on behalf of Wonderbag) then undertake interactive training and activation (demonstration) sessions with community members who receive the Wonderbags. These sessions provide information on how to use and care for the Wonderbags as well as to engage with end users regarding queries that they may have in relation to the use of the Wonderbags.

Wonderbag also engages with stakeholders through electronic and social media. Wonderbag has recently launched a customer engagement app called MyWonderbag. MyWonderbag is an interactive community engagement platform where Wonderbag can share information with bag users. This platform is available in app format, webapp as well as USSD in order to make sure that Wonderbag is able to reach all bag users, no matter how rural their location.

MyWonderbag includes recipes, health and wellness information, information about the Wonderbag, competitions and a social media feed where users can

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | <p>post about their experiences with their Wonderbag. In creating MyWonderbag, Wonderbag was mindful of the low-income bag users who will be using this app the most. Both data and airtime are expensive and often unaffordable items for the vast majority of South Africans. Therefore, MyWonderbag was created to use minimal data so that bag users can explore the app without having to worry about data costs. Wonderbag also runs competitions on the app where users can win airtime and food vouchers.</p> <p>Wonderbag also communicates with stakeholders through other mechanisms, predominantly including telephone calls, email and WhatsApp messages. Specifically, WhatsApp groups are kept for groups such as Stokvels and large local organisations.</p>                                                                                                                                                                                                                                                                                            |
| <b>Date(s) of stakeholder consultation</b> | <p>Bhamshela: 01-May-2023<br/> Kraaifontein, WC: 01-June-2023<br/> Hillcrest Molweni Community: 15-June-2023<br/> Nonoti Primary School: 30-September-2023<br/> CCFM Women's Conference: 21-October-2023<br/> Chatsworth: 23-November-2023<br/> Going Home Campaign: 28-November-2023<br/> KwaDukuza: 11-November-2023; 02-December-2023<br/> Durban CBD: 7-December-2023<br/> Muizenberg Community: 28-January-2024<br/> Living Hope, Capricorn: 01-February-2024<br/> Phoenix: 02-February-2024<br/> Umgeni Area: 03-February-2024<br/> Brackenfell Township: 16-February-2024<br/> Dunoon Information Settlement: 01-March-2024<br/> Pinelands Islamic Centre: 01-March-2024<br/> Milnerton-Marcorn Bean Community: 01-March-2024<br/> Creative Kids, Manenberg: 01-March-2024<br/> Hluhluwe: 01-March-2024<br/> Starwood, Phoenix: 16-February-2024; 06-March-2024<br/> Mbazwana: 01-April-2024<br/> Matubatuba: 01-May-2024<br/> Rescue Among Many: 10-May-2024<br/> Magwaveni: 01-June-2024<br/> Hambanathi Community: 01-June-2024<br/> Jozini: 01-June-2024</p> |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | <p>Groote Schuur Hospital: 03-November-2023; 31-October-2024</p> <p>The Blind, Worcester: 01-December-2024</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Communication of monitored results | <p>Wonderbag communicates its monitoring report through several platforms. The reports are publicly available on the Verra portal for access. In addition, once the monitoring report is approved, results are shared on the Wonderbag website and social media pages.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Consultation records               | <p>The Wonderbag training and activation teams recognise the importance of ensuring that typical questions raised at stakeholder consultations are addressed. As a procedure in this regard, the Wonderbag team documents major engagements and saves such records in the company's archives. These documents provide the methods of stakeholder engagements (typically physical meetings related to training of distribution partners and/or end-user activation/demonstration sessions), ongoing mechanisms for engagement and outcomes of stakeholder consultations.</p> <p>The documented outcomes of the engagements include details such as the participating organisation, the location and date of the engagement, a description of the engagement and details of attendees, if known.</p> |
| Stakeholder input                  | <p>Wonderbag ensures that the teams engaging with communities are prepared for ongoing communications by engaging in train-the-trainer sessions.</p> <p>Inputs can be received by the feedback option on the MyWonderbag app and also via the Wonderbag Facebook page (<a href="https://www.facebook.com/TheWonderbag/">https://www.facebook.com/TheWonderbag/</a>).</p> <p>Wonderbag responds personally to each recommendation or complaint to ensure good customer service and customer engagement. A sample of the types of comments received are provided in section 2.15 below. None of the comments received during the monitoring period are related to the operation or maintenance of the bags and therefore do not require the project design to be updated or amended.</p>             |

### 2.1.3 Free, Prior, and Informed Consent

|                        |                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Consent</b>         | During all processes and engagements including distributions, user habit surveys and stakeholder engagement sessions, consent is obtained to use participants responses and data for the grouped project processes. There are no ongoing conflicts that may be exacerbated or influenced by the project as Wonderbags are distributed directly into communities. |
| <b>Outcome of FPIC</b> | Participants agreed for their responses and information to be used in the grouped project. The project distributes devices into households which does not encroach on land. Furthermore the project does not relocate people without consent or cause physical or economic displacement.                                                                         |

### 2.1.4 Grievance Redress Procedure

| Grievances received | Resolution and outcome                                                                                                                                                                                                                                                                     |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| N/A                 | No grievances have been received to date. Wonderbag has various representatives in communities through which engagement occurs. Communities are informed through these engagements that should there be any grievances they may raise them in the process and Wonderbag will address them. |

### 2.1.5 Public Comments

| Summary of comments received                                                                                                                                                                                                               | Actions taken                                                                                                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| There were no public comments received during the public comment period of 13-July-2023 to 12-August-2023 or outside of this period separate to those received during the stakeholder consultations conducted as mentioned in section 2.1. | Not Applicable                                                                                                                                                                                |
| <p>Date: 21-October-2023</p> <p>Engagement: CCFM Women's Conference</p> <p>Comment: Wonderbag' reduce cooking time and fuel cost but additional recipes would be nice</p>                                                                  | Wonderbag has added additional recipes to the MyWonderbag app and included them as printed inserts for future distributions. The recipes were additionally translated into Zulu and Afrikaans |

|                                                                                                                                                                                                         |                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Date: 14-May-2023</p> <p>Engagement: Durban North Coast Community Engagement</p> <p>Comment: Difficulty in completing app registration due to limited data coverage</p>                              | <p>Wonderbag has increased functionality to incorporate manual registration and USSD functionality which is then later uploaded to the MyWonderbag app.</p> |
| <p>Date: 06-January-2024</p> <p>Engagement: Red Cross Midlands Distribution</p> <p>Comment: The bags should be provided for free without the R50 co-payment</p>                                         | <p>Wonderbag provided additional materials to community leaders explaining the carbon project and the policy requiring the typical minimal R50 payment.</p> |
| <p>Date: 13-June-2024</p> <p>Engagement: MyWonderbag App feedback portal</p> <p>Comments: Numerous users provided feedback that the Wonderbag resulted in energy savings and improved food quality.</p> | <p>Wonderbag responded to each response and selected several for testimonials to use in social media.</p>                                                   |
| <p>Date: 04-July-2025</p> <p>Engagement: Cape Flats Community Leaders</p> <p>Comment: The Wonderbag reduces paraffin use and improves child safety.</p>                                                 | <p>Wonderbag recorded the feedback and featured the feedback as a community case study.</p>                                                                 |
| <p>Date: 17-July-2025</p> <p>Engagement: WhatsApp Feedback</p> <p>Comment: Inner liners are difficult to replace due to the remote location of the households.</p>                                      | <p>Wonderbag provided replacement liners and shipped them using a logistics partner.</p>                                                                    |

## 2.2 Risks to Stakeholders and the Environment

### 2.2.1 Management Experience

Wonderbag has longstanding experience in the design, distribution, and monitoring of household heat-retention cooking interventions, community engagement, and carbon project delivery. Wonderbag has actively implemented carbon projects since 2010 in Rwanda and 2012 in South Africa, with operational responsibilities including supply-chain management, stakeholder identification, end-user training, after-sales support, and measurement, reporting and verification aligned to the required methodologies.

Wonderbag has established structured engagement mechanisms to ensure effective communication with affected stakeholders, including:

- Community engagements through local NGOs, community groups, and municipal channels to identify eligible households.
- Regular user feedback using field visits, helplines/social media, and post-distribution monitoring surveys to assess satisfaction, usage, and any emerging issues.
- A structured grievance mechanism whereby concerns are received, logged, investigated, and addressed with documented responses and, where necessary, corrective actions.

Where required, Wonderbag has engaged independent specialists and consultants to supplement internal capacity, particularly for carbon methodology application, sampling design, data governance, and verification readiness. External experts have been retained to:

- Assist with carbon credit processes such as drafting documentation
- Conduct user habit surveys in the field
- Develop IT solutions to monitoring Wonderbag distribution and collate survey data

There have been no changes to the core project management structure during the current monitoring period. Wonderbag remains responsible for project execution, monitoring, and community engagement, supported by appointed consultants and specialist service providers as described above.

### 2.2.2 Risk assessment

|                                                            | Risk identified    | Mitigation or preventative measure(s) taken                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural and human-induced risks to stakeholders' wellbeing | No risk identified | Wonderbag materials are safe and largely recycled. The bags are made from repurposed insulation foam and fabric. The use of recycled chip-foam diverts waste from landfill and contributes to circular-economy outcomes. Where a unit is defective within the warranty period, it can be returned where it is disposed of in an environmental friendly manner and a replacement is provided. |

|                                                                       |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                       |                    | <p>Risk during use is low because the Wonderbag is a passive heat-retention device. Cooking is initiated on a conventional stove, after which the heated pot is sealed in the insulated bag and no additional energy source is required. This eliminates the need for ongoing simmering with an open flame or energised hotplate, which reduces exposure to common cooking hazards. There are therefore no natural or human induced risks to stakeholders in the project.</p> |
| <b>Risks to stakeholder participation</b>                             | No risk identified | <p>There are no risks to stakeholders participating in engagements. Stakeholder engagements occur in communities directly and as such any risks relating to travel or participation are minimized.</p>                                                                                                                                                                                                                                                                        |
| <b>Working conditions</b>                                             | No risk identified | <p>In accordance with South Africa's Basic Conditions of Employment Act (Act No. 75 of 1997), Wonderbag is committed to ethical practices, ensuring safe working conditions. This Act establishes and regulates basic conditions of employment, giving effect to the right to fair labour practices as referred to in section 23(1) of the South African Constitution</p>                                                                                                     |
| <b>Safety of women and girls</b>                                      | No risk identified | <p>Wonderbag distributes into low-income communities where the positive impacts of the use of Wonderbags is predominantly felt by women and girls. The time savings in cooking improves the safety of this group as it reduces time spent in front of open flames or gathering firewood. As such there are no risks identified as a result of the grouped project.</p>                                                                                                        |
| <b>Safety of minority and marginalized groups, including children</b> | No risk identified | <p>Wonderbag distributes into low-income communities where the use of Wonderbags positively impacts households. The time savings in cooking improves the safety of this group as it reduces time spent in front of open flames or gathering firewood. As such there are no risks identified as a result of the grouped project.</p>                                                                                                                                           |

|                                                                                                                                               |                    |                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers) | No risk identified | This is not applicable for Wonderbags. Wonderbags are made from fabric and recycled foam. The use of Wonderbags do not release any pollutants that could be hazardous. |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 2.3 Respect for Human Rights and Equity

### 2.3.1 Labor and Work

|                                 | Risks identified <sup>3</sup> | Mitigation or preventative measure(s) taken                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Discrimination                  | No risk identified            | Wonderbag is committed to creating a respectful and inclusive environment. The company emphasizes equal opportunity, ensuring a workplace free from discrimination.                                                                                                                                                                                                                                                     |
| Sexual harassment               | No risk identified            | Wonderbag is committed to creating a respectful and inclusive environment. Wonderbag emphasises diversity and equal opportunity, ensuring a workplace free from sexual harassment. Any cases are reported to management through the process set out in Wonderbag's grievance policy.                                                                                                                                    |
| Gender equity in labor and work | No risk identified            | In accordance with South African labour laws, Wonderbag ensures a workplace free from discrimination, where all employees, regardless of gender, have equitable chances for growth and development. This commitment aligns with the Employment Equity Act, 1998 (Act 55 of 1998 as Amended), which mandates equal pay for work of equal value and prohibits unfair discrimination in any employment policy or practice. |
| Forced labor                    | No risk identified            | In accordance with South Africa's Basic Conditions of Employment Act (Act No. 75 of 1997), Wonderbag is committed to ethical practices and does not engage in or support                                                                                                                                                                                                                                                |

<sup>3</sup> The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

|                   |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                    | human trafficking, forced labour or child labour. This Act establishes and regulates basic conditions of employment, giving effect to the right to fair labour practices as referred to in section 23(1) of the South African Constitution                                                                                                                                                                                                                                       |
| Child labor       | No risk identified | Wonderbag ensures a responsible and ethical work environment by adhering to South African laws, including the Basic Conditions of Employment (Act No. 75 of 1997) which prohibits the employment of children under the age of 15 and outlines strict regulations to protect young workers aged 15 to 18. This commitment aligns with Section 28(1)(e) of the South African Constitution, which guarantees every child's right to be protected from exploitative labour practices |
| Human trafficking | No risk identified | Wonderbag upholds high standards in labour practices, ensuring a responsible and ethical work environment. This aligns with South African laws, including the Prevention and Combating of Trafficking in Persons (Act 7 of 2013), which criminalizes all forms of human trafficking.                                                                                                                                                                                             |

### 2.3.2 Human Rights

| Risks identified   | Mitigation or preventative measure(s) taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No risk identified | The grouped project distributes heat retention cooking technology in the form of Wonderbags to households. No discrimination occurs during this distribution although prioritization is given to low-income communities. As a result, no risk has been identified to human rights as a result of the project. Wonderbag complies with all relevant laws and regulations that protect human rights in South Africa, including the Constitution of the Republic of South Africa, 1996, which enshrines fundamental human rights; the Companies Act 71 of 2008, which governs corporate conduct and ethical business practices; and the Basic Conditions of Employment Act, 1997, which sets minimum employment standards and ensures fair labour practices. |

### 2.3.3 Indigenous Peoples and Cultural Heritage

| Risks identified   | Mitigation(s) or preventative measure taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No risk identified | The activity is a demand-side distribution of portable, household heat-retention cookers within South Africa only; it involves no land acquisition, site works, resource extraction, or changes to land or tenure that could affect Indigenous peoples, local communities or customary rights holders. During the monitoring period there were no constructions or land leases related to the project and no distributions adjacent to recorded Indigenous or customary territories (as confirmed). Project design and implementation are limited to household behaviour change and appliance use, reducing the possibility for adverse impacts on customary rights. Stakeholder engagement and a recorded grievance/feedback mechanism via distribution partners remain in place to capture and address any unforeseen concerns. Activities are confined to household cooking practices and are more likely to yield positive co-benefits (reduced fuel use and indoor air pollution) than to affect cultural expressions. |

### 2.3.4 Property Rights

| Risks identified   | Mitigation or preventative measure(s) taken                                                                                                                                                                  |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No risk identified | Wonderbags are individual units that are distributed to a household directly. As such no risks have been identified as the distribution of these units does not impact the user's property or access rights. |

### 2.3.5 Benefit Sharing

|                                              |                                                                        |
|----------------------------------------------|------------------------------------------------------------------------|
| Summary of the benefit sharing plan          | N/A. The project does not impact on property rights as outlined above. |
| Benefit sharing during the monitoring period | N/A. The project does not impact on property rights as outlined above. |

## 2.4 Ecosystem Health

|                                        | Risk identified    | Mitigation or preventative measure(s) taken during the monitoring period                                                                                                              |
|----------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Impacts on biodiversity and ecosystems | No risk identified | Use of the Wonderbag results in positive impacts through the reduction of fuels for cooking such as non-renewable biomass. This has a positive impact on biodiversity and ecosystems. |
| Soil degradation and soil erosion      | No risk identified | Not applicable. The use Wonderbags does not impact soil degradation or erosion.                                                                                                       |
| Water consumption and stress           | No risk identified | Not applicable. Use of the Wonderbag does not result in significant changes in water for cooking.                                                                                     |

### 2.4.1 Rare, Threatened, and Endangered species

|                                       |                                                                                                                    |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Species or habitat                    | Not applicable. Wonderbags are distributed into households directly where the dwelling is already established.     |
| Areas needed for habitat connectivity | Not applicable. The Wonderbags are distributed into households directly where the dwelling is already established. |

|                                                       | Risks identified   | Mitigation or preventative measure(s) taken                                                                        |
|-------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------|
| Habitats for rare, threatened, and endangered species | No risk identified | Not applicable. The Wonderbags are distributed into households directly where the dwelling is already established. |
| Areas for habitat connectivity                        | No risk identified | Not applicable. The Wonderbags are distributed into households directly where the dwelling is already established. |

### 2.4.2 Introduction of species

| Species introduced | Classification | Justification for use | Adverse effects and mitigation |
|--------------------|----------------|-----------------------|--------------------------------|
| N/A                | N/A            | N/A                   | N/A                            |
| N/A                | N/A            | N/A                   | N/A                            |
| N/A                | N/A            | N/A                   | N/A                            |

| Existing invasive species | Mitigation measures to prevent the spread or continued existence of invasive species |
|---------------------------|--------------------------------------------------------------------------------------|
| N/A                       | N/A                                                                                  |
| N/A                       | N/A                                                                                  |
| N/A                       | N/A                                                                                  |

|                  | Risks identified   | Mitigation or preventative measure(s) taken                                                                                                       |
|------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Invasive species | No risk identified | Wonderbags are distributed into individual households and as such do not impact on invasive species or introduce new invasive species to an area. |

### 2.4.3 Ecosystem conversion

|                      | Risks identified   | Mitigation or preventative measure(s) taken                                                                                                                   |
|----------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ecosystem conversion | No risk identified | Wonderbags are distributed into individual households situated on residential and rural land. No conversion of ecosystems occurs due to the project activity. |

## 3 IMPLEMENTATION STATUS

### 3.1 Implementation Status of the Project Activity

Nineteen Project Activity Instances, that contain a maximum of 20,000 bags each, were implemented under the Grouped Project during the monitoring period. No new instances were included in this monitoring period.

| Project Activity Instance | Bags in Instance |
|---------------------------|------------------|
| RfC1                      | 19,933           |
| RfC2                      | 19,958           |
| RfC3                      | 19,980           |
| RfC4                      | 19,983           |
| RfC5                      | 18,961           |

| Project Activity Instance | Bags in Instance |
|---------------------------|------------------|
| RfC6                      | 19,952           |
| RfC7                      | 19,996           |
| RfC8                      | 19,998           |
| RfC9                      | 19,991           |
| RfC10                     | 19,914           |
| RfC11                     | 17,109           |
| RfC12                     | 18,018           |
| RfC13                     | 18,673           |
| RfC14                     | 17,567           |
| RfC15                     | 17,256           |
| RfC16                     | 19,015           |
| RfC17                     | 19,394           |
| RfC18                     | 19,931           |
| RfC19                     | 10,301           |
| <b>Grouped Project</b>    | <b>355,930</b>   |

#### Operation of the Project Activity Instances during this monitoring period:

In this monitoring period, emission reductions from bags distributed to households cooking with paraffin and coal have been excluded. These users form a small proportion (0.5%) of the overall population and these users were not surveyed due to logistical and financial constraints in the user habit survey. The proportion of 0.5% is reflective of the total users in the grouped project database, i.e. across all project activity instances, that make use of paraffin and coal for cooking. This percentage may differ from each instance to instance due to the specific fuel splits within that instance. Excluding these emission reductions results in lower emission reductions claimed from the project and is thus still conservative. Due to the small number of units, this exclusion does not significantly impact the project.

**Any other changes:** There were no other changes e.g., to project proponent or other entities during the monitoring period.

#### FARs from previous (3<sup>rd</sup>) verification:

Six FARs were raised during the 3<sup>rd</sup> verification. The table below outlines the FARs and compliance with the requirements.

| Description of issued FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Compliance with FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>FAR-01</b></p> <p>With reference to finding #1(2) raised by VERRA during the PRR round 2; for all the future verifications, the verifying VVB shall ensure that PP has established the following through surveys:</p> <ol style="list-style-type: none"> <li>1. Duration of cooking food on baseline stove before placing it in Wonderbag.</li> <li>2. How the end-user determines that the food is ready to be transferred into the Wonderbag.</li> <li>3. If the end-users cook entirely on the baseline stove and use Wonderbag just to keep the food warm throughout the day.</li> </ol> | <p>The User Habit Survey conducted for the current (4<sup>th</sup>) monitoring period included these questions and are reflected in as follows in the User Habit Survey 4 Analysis Excel, within the respective tabs titled 'Firewood', 'Gas' and 'Electricity':</p> <ol style="list-style-type: none"> <li>1. Duration of cooking food on baseline stove before placing it in Wonderbag: <b>column BU</b></li> <li>2. How the end-user determines that the food is ready to be transferred into the Wonderbag: <b>column BV</b></li> <li>3. If the end-users cook entirely on the baseline stove and use Wonderbag just to keep the food warm throughout the day: <b>column BX</b></li> </ol> <p>The results from the survey questions above are consolidated in the tab titled 'Raw'. The results are incorporated as follows into the ex post ER calculations:</p> <ul style="list-style-type: none"> <li>• Duration of cooking food on baseline stove before placing it in Wonderbag: used to calculate project emissions associated with the project stove, where these project stoves are either electric or LPG.</li> <li>• If the end-users cook entirely on the baseline stove and use Wonderbag just to keep the food warm throughout the day: users who reported that they only use the Wonderbag to keep food warm, i.e. do not use the bags as intended for actual cooking purposes, were recorded as 'non-users'. Accordingly, these inputs reduce the total usage rates.</li> </ul> |
| <p><b>FAR-02</b></p> <p>During the next monitoring survey, PP shall demonstrate compliance with monitoring requirements with</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Verra has granted an allowance for FAR-02 (see file titled 'VCS_Allowance_Granted_2384_2JUN2025' which is publicly available on the Verra website). This FAR was deferred on the condition that a direct</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

| Description of issued FAR                                                                            | Compliance with FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>respect to 'operational hours' set out in §40 of the applied methodology AMS-II.C version 15.</p> | <p>monitoring pilot study be conducted in the current monitoring period.</p> <p>The direct monitoring pilot study was conducted, the results of which can be seen in the file '2025-09-11 Community Kitchen Cooking'.</p> <p>Verra specified various requirements when conducting the direct monitoring pilot study. Accordingly, the below section 3.2.1 of this monitoring report expands on the following Verra requirements, under a subheading titled 'DEVIATIONS APPLIED FOR IN THIS MONITORING PERIOD':</p> <ul style="list-style-type: none"> <li>• An outline of the data recording method and calibration practices for the selected monitoring method</li> <li>• Data obtained during the pilot survey</li> <li>• Analysis of pilot survey data.</li> </ul> <p>In summary of the analysis of pilot survey data:</p> <p>As per FAR-06 below, the data results from the direct measurement pilot survey were compared to the values established through the latest User Habit Survey conducted for the fourth monitoring period. The values established through direct measurement were found to be higher than the values established in the latest user habit survey. Accordingly, no retroactive application to the emission reduction calculations is required, because it has been demonstrated that no over-issuance of VCUs has occurred with respect to the past or present assumptions used to calculate the emission reductions from the use of Wonderbags in households that use electric project stoves.</p> |

| Description of issued FAR                                                                                                                                                                                                                                                                                                                                          | Compliance with FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>FAR-03</b></p> <p>With reference to finding #3(3) raised by VERRA during the PRR round 2, for the next monitoring survey, verifying VVB shall ensure that PP demonstrates compliance with § 18(a) of CDM Survey Sampling Standard, version 8, in case of survey results not meeting the minimum required precision level.</p>                                | <p>Compliance with this FAR has been demonstrated, as indicated in the tab titled 'Analysis', in the User Habit Survey 4 analysis Excel.</p> <p>The minimum precision threshold of 10% has been met for all three fuels surveyed in the 4<sup>th</sup> monitoring period as follows:</p> <ul style="list-style-type: none"> <li>Electricity precision: 7.73%</li> <li>Gas precision: 8.49%</li> <li>Wood precision: 4.12%</li> </ul> <p>A confidence factor of approximately 1.96 was applied, corresponding to a 95% confidence level. This is consistent with the requirements of the CDM Guideline: Sampling and surveys for CDM project activities and programmes of v4, which requires the application of statistically appropriate confidence factors when determining confidence intervals. Furthermore, the use of the normal distribution value (<math>z \approx 1.96</math>) is appropriate given the large sample sizes, in line with CDM Guideline: Sampling and surveys for CDM project activities and programmes of v4.</p> |
| <p><b>FAR-04</b></p> <p>With reference to finding #1(1) raised by VERRA during PRR round 2, for the next periodic verification, the verifying VVB shall ensure that the grouped project seeks project deviation either through revision of applied methodologies or through the use of a new methodology entirely before the next verification of the project.</p> | <p>Verra has granted an allowance for FAR-02 (see file titled 'VCS_Allowance_Granted_2384_2JUN2025' which is publicly available on the Verra website) as the revision to VM0050 is underway.</p> <p>No new project activity instances have been included in this monitoring period.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Description of issued FAR                                                                                                                                                                                                                                                                                                                                                                                                                                        | Compliance with FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Before the deviation is finalised, the project cannot add any new project instance or new Wonder Bag sales to the database of the existing instances.</p>                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p><b>FAR-05</b></p> <p>With reference to finding #2(2) raised by VERRA during the PRR round 2, for the next periodic verification, the user habit survey shall be carried to determine different types of stoves used by wonderbag users, their exact capacities and their average time of use. Measurement surveys shall also be carried out for all other fuel types.</p>                                                                                     | <p>The determination of stove type, time of use and capacity was added to the user habit survey for the 4<sup>th</sup> verification. In addition, measurements were conducted for the other fuels. Please refer to tabs titled 'Firewood', 'Gas' and 'Electricity' in the User Habit Survey 4 analysis Excel.</p> <p>The relevant columns in each tab are:</p> <ul style="list-style-type: none"> <li>• Stove type: BQ</li> <li>• Capacity: BS</li> <li>• Cooking time: BU</li> </ul> <p>The results from the tabs above were consolidated in the tab titled 'Raw'. See columns BJ, BL and BN respectively.</p>                                                         |
| <p><b>FAR-06</b></p> <p>With reference to finding #4 raised by VERRA during the PRR round 2, for the next periodic verification, PP shall monitor the value of operating hours through direct measurement. PP shall compare the value established through direct measurement during the next MP with the value established during the current MP. If the value established through direct measurement is found to be lower, PP shall retroactively apply the</p> | <p>Verra has granted an allowance for FAR-06 (see file titled 'VCS_Allowance_Granted_2384_2JUN2025' which is publicly available on the Verra website). This FAR was deferred on the condition that a direct monitoring pilot study be conducted in the current monitoring period.</p> <p>The direct monitoring pilot study was conducted, the results of which can be seen in the file '2025-09-11 Community Kitchen Cooking'.</p> <p>Verra specified various requirements when conducting the direct monitoring pilot study. Accordingly, the below section 3.2.1 of this monitoring report expands on the following Verra requirements, under a subheading titled</p> |

| Description of issued FAR                                                                                                                                              | Compliance with FAR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>lower value to the emission reduction calculations of current MP and deduct the overissued VCUs for the current MP from the VCUs determined during the next MP.</p> | <p>'DEVIATIONS APPLIED FOR IN THIS MONITORING PERIOD':</p> <ul style="list-style-type: none"> <li>• An outline of the data recording method and calibration practices for the selected monitoring method</li> <li>• Data obtained during the pilot survey</li> <li>• Analysis of pilot survey data.</li> </ul> <p>In summary of the analysis of pilot survey data:</p> <p>The data results from the direct measurement pilot survey were compared to the values established through the latest User Habit Survey conducted for the fourth monitoring period. The values established through direct measurement were found to be higher than the values established in the latest user habit survey. Accordingly, no retroactive application to the emission reduction calculations is required, because it has been demonstrated that no over-issuance of VCUs has occurred with respect to the past or present assumptions used to calculate the emission reductions from the use of Wonderbags in households that use electric project stoves.</p> |

## 3.2 Deviations

### 3.2.1 Methodology Deviations

As per the VCS Standard v4.7 paragraph 3.20: projects are allowed to deviate from prescribed procedures under specific circumstances. These circumstances include situations where alternative methods are suited to the project context and may prove more efficient for project-specific conditions or where the deviation maintains the same level of accuracy or is more conservative than the methodology's stipulations.

The following section describes the methodology deviations applied for in previous monitoring periods as well as this fourth monitoring period.

## **DEVIATIONS APPLIED IN PREVIOUS MONITORING PERIOD**

The following three deviations were applied in the 3<sup>rd</sup> monitoring period:

### **1. Monitoring constant load conditions:**

Paragraph 20 of AMS II.C states that the constant load condition shall be demonstrated by monitoring or using the historical records of energy consumption data for a one-year period prior to the project implementation.

#### **Deviation from the AMS-II.C methodology requirements:**

The group project applied a deviation to the methodology. The deviation was to demonstrate the constant load condition by using a conservative, theoretical approach, instead of monitoring or using the historical records of energy consumption data for a one-year period prior to the project implementation.

Based on the cooking habits of Wonderbag users, the deviation assumed that the stove plates (hobs) used in the project activity were set at a constant setting (i.e. constant load condition), from the start to the end of the cooking process in order to bring the pot of food to the boiling point for the required amount of time. Thereafter, users place the pot of food in the Wonderbag heat retention bag for slow cooking, which does not require any further external heat sources, such as grid electricity. This was conservative as if the user adjusts the stove knob lower, the operating time to boil water will increase. This would result in higher energy consumption as the consumption is calculated by multiplying the power and the operating time. The same result would occur if a user starts cooking on one setting and decreases the stove knob lower. The operating time would be longer resulting in increased energy consumption.

This deviation was applied in conjunction with deviation 2 below, which provided for the mechanism to robustly quantify the emission reductions in a conservative manner.

### **2. Physical verification of “power” and “operating hours”:**

Paragraphs 40 of AMS II.C relate to the parameter pi (electrical power demand (kW) of the baseline equipment).

Paragraph 40 provides for the monitoring approaches that may be used “for projects using Option 1, i.e. if the project equipment installed has a constant current (ampere) characteristic”. Paragraph 40 further requires that “monitoring shall consist of monitoring either the ‘power’ and ‘operating hours’ or the ‘energy use’ of the equipment installed using an appropriate method.” Appropriate methods include:

- (a) Recording the “power” of the project equipment installed (e.g. lamp or refrigerator) using nameplate data or bench tests of a sample of the units installed and metering a sample of the units installed for their operating hours using run time meters; or

- (b) Metering the “energy use” of an appropriate sample of the project equipment installed.”

#### Deviation from the methodology AMS-II.C requirements:

The group project applied deviations to the methodology in the third monitoring period. The deviation was the use of the conservative, theoretical values, instead of monitored data sets that may be physically verified by an auditor.

The deviation was related to Paragraph 40(a) of AMS II.C, which was to apply a conservative, theoretical value for the quantification of power, specifically parameter  $pi$  (electrical power demand (kW) of the baseline equipment), as well as the upper bound of the survey results for operating hours.

The value for  $pi$  was based on the assumption that Wonderbag users use their electric stove hobs at the highest setting, in a constant load condition, for the duration of the cooking time on the electric stove plate. This measure allows for the robust quantification of project emissions because it therefore assumes the highest value for  $pi$  (electrical power demand (kW) of the baseline equipment) in the third monitoring period for the operation of the smallest stove type (1.5kW as fixed in the validation) in conjunction with the operating hours in the project scenario determined in the user habit survey.

The impacts are discussed as follows, with reference to reduced baseline emissions and increased project emissions.

- **Reduced baseline emissions:** the deviation assumed the use of a 1kW stove plate rating in the third monitoring period, as opposed to a 1.5kW stove plate rating applied previously for the baseline emission calculations. The stove-hob rating of 1kW<sup>4</sup> was assumed to be the smallest available stove plate, based on technical specifications from one of South Africa’s most popular electric stove manufacturers<sup>5</sup>. Applying the lowest stove-hob rating for calculation of the baseline emissions in the third monitoring period allowed for robust quantifications because it reduces the baseline emissions and therefore the net emission reductions. This was therefore a conservative approach.

Further support of the conservativeness of this approach was provided for in the results of the household monitoring survey used in this third monitoring report. The survey results indicated that the average household size in the population was 5 people. This large number of household residents would likely require the use of the biggest stove-hob, to accommodate a large pot, which would have the highest stove-hob rating. As per the Defy specifications, the highest stove hob rating would be 2kW. Accordingly, the

<sup>4</sup> Sources include the technical specifications for a Defy gas-electric hybrid stove model DGS179 and technical specifications available online at: <https://www.defy.co.za/products/freestanding-cookers-stoves-electric>

<sup>5</sup> <https://www.mordorintelligence.com/industry-reports/south-africa-kitchen-appliances-product-market#:~:text=South%20Africa%20Kitchen%20Appliances%20Product%20Market%20Leaders>

average power rating of 1kW has been applied to robustly quantify the baseline emissions, which results in materially lower net emission reductions in the third monitoring period. Therefore, this deviation was considered conservative.

- Increased project emissions: The increased operating hours in the project scenario of the third monitoring report resulted in higher project emissions.

The result of the deviations was a material decrease in net emission reductions due to decreased baseline emissions and increased project emissions. Therefore, this deviation was conservative.

The deviation request was based on commitment that in future, monitoring surveys would be conducted to establish the operating hours, through the metering of a sample of the units installed for their operating hours using physical measurements.

### 3. Sampling precision value

Paragraph 18(c) prescribes that the option in subparagraph 18(b) of the Sampling Standard is only eligible for the application to the survey undertaken during the first two years of the crediting period of the group project, and when the attained confidence/precision from the actual samples is equal to or better than 90/15 for a small-scale project activity and 95/15 for a large-scale project activity.

#### **Temporary deviation from the requirements of the CDM Sampling Standard:**

A temporary deviation was requested to waive the conditions in paragraph 18 (c) of the CDM Sampling Standard to apply paragraph 18(b).

In certain instances, it becomes impractical or unsafe to continue the sampling of data to achieve the required precision. A large number of Wonderbag recipients are located in lower-income communities, and unsafe conditions, such as those experienced in the Western Cape in August of 2023 during the taxi strikes<sup>6</sup>, which makes it unfeasible to conduct surveys in these areas.

Paragraph 18(c) of the Sampling Standard states: The option in subparagraph (b) above is only eligible for the application to the survey undertaken during the first two years of the crediting period of the CDM project activity or component project activities (CPAs) (if sampling is undertaken at the PoA level, the two-year limit applies from the start date of crediting to the PoA), and when the attained confidence/precision from the actual samples is equal to or better than 90/15 for a small-scale CDM project activity and 95/15 for a large-scale CDM project activity.

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<sup>6</sup> Maseko, N. Radford, A. 2023. *BBC News*, "Five people killed in Cape Town taxi strike violence". [Available Online]: [Five people killed in Cape Town taxi strike violence - BBC News](#)

The temporary deviation was to apply the provisions of paragraph 18(b)(i)(a) of the Sampling Standard. The resulting higher precision and larger standard error requires the use of the upper bound for project emissions. This deviation allowed the project emissions to be conservatively and robustly quantified, resulting in lower net emissions reductions due to higher project emissions. Therefore, this temporary deviation was conservative.

Furthermore, the deviation was reasonable considering the country specific circumstances that delayed the undertaking of the surveys during the COVID pandemic and related lockdown rules in South Africa that were in place during 2020-2022.

The deviation request was based on the commitment to increase sampling in future surveys to achieve the necessary precision, where it is safe and practical to do so.

### **DEVIATIONS APPLIED FOR IN THIS MONITORING PERIOD**

Two of the 3<sup>rd</sup> monitoring period deviations, listed above, are applied in the 4<sup>th</sup> monitoring period:

1. Monitoring constant load conditions, relating to paragraph 20 of AMS II.C as discussed above
2. Physical verification of “power” and “operating hours”, relating to paragraph 20 of AMS II.C as discussed above

These two deviations are related to one another. They were accordingly the basis of two forward action requests (FARs) arising from the 3<sup>rd</sup> verification report issued by the VVB on 19 July 2024:

- FAR 02: “During the next monitoring survey, PP shall demonstrate compliance with the monitoring requirements with respect to ‘operational hours’ set out in Para40 of the applied methodology AMS-II.C version 15”.
- FAR 06: “With reference to finding #4 raise by VERRA during the PRR round 2, for the next periodic verification, PP shall monitor the value of the operating hours through direct measurement. PP shall compare the value established through direct measurement during the next MP with the value established during the current MP. If the value established through direct measurement is found to be lower, PP shall retroactively apply the lower value to the emission reduction calculations of current MP and deduct the overissued VCUs for the current MP from the VCUs determined during the next MP”.

Subsequent to the publication of the FARs above in the 3<sup>rd</sup> verification report issued by the VVB on 19 July 2024, Verra issued an exemption letter on 2 June 2025. The Verra exemption letter allows for additional time to comply fully with FARs 2 and 6:

“From 1 May 2023 through the end of the current monitoring period, we ask that you demonstrate best efforts to address the intentions and objectives of FARs 2 and 6. Such best efforts could include:

4. Evaluation of various monitoring approaches to determine the most accurate and feasible method(s).
5. Pilot testing the selected method(s) on sample stoves:
  - a. Conduct a two-to-three-day pilot survey using the chosen method on a sample of stoves
  - b. Collect and present the data obtained during this survey to demonstrate feasibility and reliability
  - c. Analyze this data to determine the variation in stove usage and assess accuracy before full-scale implementation.

Verra requests that you report on the steps taken to comply with FARs 2 and 6 as part of the monitoring report. The monitoring report should include:

- An outline of the data recording method and calibration practices for the selected monitoring method
- Data obtained during the pilot survey
- Analysis of pilot survey data.”

Accordingly, the following are responses to Verra’s conditions listed above.

1. Evaluation of various monitoring approaches to determine the most accurate and feasible method(s):

It was concluded that a sample of Wonderbag users, cooking on electric project stoves, could feasibly be included in a direct monitoring campaign. The method entailed the use of run time meters to monitor the value of the operating hours through direct measurement.

Pilot was conducted in a central location, in a community kitchen, in Durban, KwaZulu Natal. The use of a central location made it possible to monitor the cooking practices in a controlled setting, for example where monitors could ensure that the meters were correctly installed and used. In addition, the community kitchen provided for formal electricity connections that could supply the electric stoves in the pilot. The latter was particularly important, considering that many of the Wonderbag users come from low-income housing settlements, where electrical connections are often informal.

The pilot participants were requested to cook, using their Wonderbags, as if they were cooking in their own homes. The meals prepared in the pilot (described below) are therefore indicative of typical meals cooked in the respective homes.

## 2. Pilot testing the selected method(s) on sample stoves:

A direct monitoring pilot study was conducted, employing the use of run time meters to measure the time taken to cook meals, on a sample of electric stove hobs. The aim of the pilot study was to cross check the results arising from user surveys in the fourth monitoring period, relating to the amount of time users spend cooking food on their electric hobs (i.e. the project stove), prior to removing the sealed pot with food and putting the pot into the Wonderbag for further cooking.

The full details of the pilot direct monitoring campaign are available in the supporting Community Kitchen Cooking Excel Worksheet. The following is a summary of the contents of the worksheet.

The sample size of Wonderbag users in this pilot was 80 households. Each household was represented by the cook from the household in the survey. Each household representative cooked 3 meals on 3 different days. I.e. 80 households resulted in 240 meals cooked over the three days. The pilot survey was conducted at a community kitchen in Durban, KwaZulu Natal. Household representatives were invited to cook over different days, on the following dates:

- 20-August-2025 to 23-August-2025,
- 15-September-2025 to 17-September-2025 and
- 30-September-2025 to 02-October-2025.

This procedure could be repeated in future monitoring periods if required.

Wonderbag users were selected from households from the surrounding area, based on the following criteria:

- Own and make use of a Wonderbag
- Main cooking fuel is electricity
- Cook on similar stoves to those in the community kitchen

40 new stoves were purchased for the pilot. The stove types were selected to mirror, as closely as possible, the stoves used by the Wonderbag users in the pilot. The freestanding, electric stoves comprised of both solid and spiral plates. See Appendix 4 for more details.

40 runtime meters were purchased for the pilot.

The meals cooked in the pilot were categorised as follows:

- Beans
- Beans and rice
- Beef and pap (aka maize or mealie-meal porridge)

- Beef and phuthu (aka maize or mealie-meal porridge)
- Beef and rice
- Beef chuck stew
- Beef cubes curry
- Butter chicken
- Chicken and pap
- Chicken and rice
- Chicken pieces stew
- Spinach and pap
- Wors (sausage) and phuthu
- Wors and rice

The meals selected were based on meals cooked by the household themselves in their everyday cooking to ensure familiarity with the recipe. This ensures results that are representative of the cooking practices of the household. Each meal was cooked 3 times, once each day over the 3 days. The first day was cooked without using the Wonderbag while the second and third day were cooked using the Wonderbag to allow for comparison of results.

**An outline of the data recording method and calibration practices for the selected monitoring method:**

Over the 3 days the household representatives cooked their meals at the community kitchen in Durban, KwaZulu Natal, on stoves that had a runtime meter installed. The runtime for the stove was captured after each meal to obtain the time the pot spent on the stove before being placed in the Wonderbag.

No calibration practices were required as the stoves and runtime meters were newly purchased and had never been used prior to the pilot (direct monitoring campaign).

**Data obtained during the pilot survey:**

This pilot study indicated a lower run time than is provided by users in the user habit survey, 5.22mins/adult/day compared to 8.66 mins/adult/day. The use of the user habit survey operating time in the ex post emission reductions is therefore conservative, as it results in less emission reductions due to higher project emissions. The runtime meters used are also capable of providing kWh values instead for the period of cooking. However to remain consistent with the current monitoring plan, the run time values were used in the calculations instead. As an aside, the resulting kWh from the runtime meters is lower than those resulting from the user

habit survey, indicating that the user habit survey results are more conservative due to the lower emission reductions that result.

#### **Analysis of pilot survey data:**

As per the requirements of FAR 06 arising from the previous verification, the data results from the direct measurement pilot survey were compared to the values established through the latest user habit survey conducted for the fourth monitoring period. The value established through direct measurement were found to be higher than the values established in the latest User Habit Survey. Accordingly, no retroactive application to the emission reduction calculations is required, because it has been demonstrated that no over-issuance of VCU has occurred with respect to the past or present assumptions used to calculate the emission reductions from the use of Wonderbags in households that use electric project stoves.

The average cooking time was analysed according to the same statistical requirements as the user habit survey where the precision should be within the 10% threshold required. A precision of 8.5% was calculated.

The impacts are discussed as follows, with reference to reduced baseline emissions and increased project emissions.

- Reduced baseline emissions: the use of a 1.5kW stove plate rating in the fourth monitoring period, as applied during the validation of the project, is a conservative input in the emission reduction calculations associated with the use of Wonderbags in households that typically cook with electricity. The user habit survey that was conducted for the fourth monitoring period obtained power ratings for stoves in the sample population, where possible, resulting in an average power rating of about 2kW. In the majority of cases, this rating is not visible due to the condition of the stoves. The average stove plate rating from these stove nameplates was 1.95kW, with a standard error of 0.4kW. The 1.5kW rating is therefore a conservative value in comparison to these results, even accounting for the standard error of the results. The lower bound of the results would be roughly 1.55kW. Applying the lower bound results of the surveyed stove-hob rating (1.5kW) for calculation of the baseline emissions in the fourth monitoring period allows for robust quantifications because it reduces the baseline emissions and therefore the net emission reductions. This is therefore a conservative approach.
- Increased project emissions: The increased operating hours in the project scenario of the fourth monitoring report results in higher project emissions.

The result of the deviations is a material decrease in net emission reductions due to decreased baseline emissions and increased project emissions. Therefore, this deviation is conservative.

### 3.2.2 Project Description Deviations

#### **PROJECT DESCRIPTION DEVIATIONS APPLIED IN PREVIOUS MONITORING PERIODS**

Recent thermal testing of the Wonderbags indicates that the lifetime of the Wonderbags can feasibly be 15 years, instead of previously estimated 10 years, if properly cared for.

**Scope of deviation:** the deviation applies to the lifetime of the bags and does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario.

The project description deviation applied during the 2<sup>nd</sup> monitoring period was a deviation related to the monitoring of electricity and gas (LPG) used for cooking, with a Wonderbag.

This deviation from the Project Description was applied to all fifteen Project Activity Instances monitored in this 2<sup>nd</sup> monitoring period.

Section 5.3.1 of the Project Description requires that “Field researchers visit and interview the Wonderbag users identified in the random sample-target population during the respective surveys.” Site visits are required so that the field researchers can physically measure the cooking fuels over a specified number of days.

However, no physical measurements of electricity are taken during the onsite visits. Instead, Wonderbag recipients are asked to provide the typical number of minutes the pot of food is cooked on the stove top, before it is placed in the Wonderbag for further cooking. This is because the measurement of electricity in the context of the project would require the use of electricity meters, to measure cooking time, which is not economically feasible or practical. Hence, the validated approach to calculating electricity emission reductions is based on the amount of time (X minutes) that the food is cooked on a stove top, multiplied by a default maximum electric stove power rating (1 kW). This approach is conservative, as it assumes that the stove plate is used at its maximum capacity for the entire cooking time. This approach is also more precise than taking the full daily electricity readings of a household, as cooking is only one of the activities that households use electricity for.

This approach, to measure cooking time (minutes) on the stove plate, is equally applicable to the Wonderbag users that cook with gas. In addition, measuring the cooking time on the stove plate is more accurate than taking the daily measurement of gas, as recorded currently during physical measurements by survey field researchers. This is also because gas is used for other household activities, such as lighting and heat, in addition to cooking.

#### **Description of the deviation:**

Therefore, the requested project deviation is to survey Wonderbag users that cook with electricity and gas via telephone, or other electronic communication means such as

Skype/WhatsApp etc., instead of costly and time-intensive physical visits that would provide the same data sets.

The telephonic surveys represent the deviation from the monitoring plan in the Project Description, with respect to the requirement for:

- 1.) Physical site visits to households that use electricity and gas for cooking and
- 2.) The physical measurement of gas cooking fuels in the implemented project activity, i.e. cooking with a Wonderbag.

This monitoring plan deviation was identified during the user habit survey undertaken for the second monitoring period. This deviation is applicable to this monitoring period (third monitoring period) and is expected to be applicable to future monitoring periods. The results from the gas users raised concerns that the gas bottles were being used for activities in addition to cooking. The physical weighing of the gas does not account for any gas being used for purposes other than cooking. As a result, Wonderbag users were contacted by telephone and asked to provide the typical amount of minutes that their pot spends on their gas stove, when cooking food, prior to being placed in a Wonderbag for further cooking.

The same calculation procedure was applied as calculating electricity consumption. The minutes spent cooking food on the gas stove plate was multiplied by a default power rating for a gas stove plate (3kW).

This deviation was applied only to gas users in the current monitoring period. A total of 145 surveys of gas-users were conducted telephonically as per this deviation, to survey gas used for cooking purposes. The remaining 757 surveys in the monitoring period were completed in person, as per the registered monitoring plan in the Project Description.

The new approach, telephone/electronic communication surveys, will be applied to electricity users from the next monitoring period.

**Impact on emission reductions:** The deviation does not negatively impact the conservativeness of the quantification of greenhouse gas emission reductions:

- In the case of emission reductions from households that use LPG cooking fuel: the data sets derived from the alternative sampling method, telephonic interviews asking for cooking-time data, led to a lower variability compared to the results of the physical surveys which measured total daily consumption. However, the telephone survey results did not meet the required precision level of 10%. As a result, the upper bound values of the survey results were used in the emission reduction calculations.

The use of the upper bound is the most conservative approach because it assumes that the surveyed households made use of higher quantities of fuels compared to the lower bound values, which may be used when the survey precision values are met. The use of

the upper bound survey values is conservative because it results in fewer emission reductions from this category of cooking fuels.

The use of the upper bound value is aligned with paragraph 18(b)(i)(a) of the CDM Survey Sampling Standard, version 8:

“If the estimates from the actual samples fail to achieve the target minimum levels of precision, the project participants or the coordinating/managing entity shall ...

(b) Apply a correction to the estimates using one of the two options below:

(i) Discounting the emission reduction estimates by ...

(a) Taking the lower or the upper bound, whatever is the more conservative, of the 90 or 95 per cent confidence interval, depending on the type of methodologies applied”

**Scope of deviation:** The deviation relates to the procedure for monitoring and measurement of electricity and gas (LPG) cooking fuels.

### **PROJECT DESCRIPTION DEVIATIONS APPLIED IN THIS MONITORING PERIOD**

There are no further project description deviations applied in this fourth monitoring period.

## 3.3 Grouped Projects

A total of nineteen Project Activity Instances were implemented during the monitoring period. The Project Activity Instances comprise a maximum of 20,000 bags per Project Activity Instances and are very similar in nature. They comprise the same technology, heat-retaining Wonderbags and are distributed in South Africa in communities that use either electricity, coal, paraffin, LPG or biomass as cooking fuels. All the bags were manufactured by Wonderbag and distributed either by Wonderbag or by distributing parties.

**Eligibility Criteria for New Project Activity Instances:** The eligibility criteria of the first nine Project Activity Instances, RfC PA 1 – PA9, were established at the group project validation and first verification. The eligibility of RfC PA 9 – PA 15 was established in the second verification. The eligibility of RfC PA16- PA 19 were established in the third verification. No new project activity instances were included in this monitoring period.

## 3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes

☒ No

## 4 DATA AND PARAMETERS

### 4.1 Data and Parameters Available at Validation

Fixed parameters specific to AMS-II.C.

|                                                                                              |                                                                                                                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $EF_{CO_2,ELEC,y}$                                                                                                                                                                                                                                                                             |
| Data unit                                                                                    | tCO <sub>2</sub> /MWh                                                                                                                                                                                                                                                                          |
| Description                                                                                  | Emission factor for the Southern African Power Pool grid.                                                                                                                                                                                                                                      |
| Source of data                                                                               | Calculated as per VT0011                                                                                                                                                                                                                                                                       |
| Value applied                                                                                | 0.9619                                                                                                                                                                                                                                                                                         |
| Justification of choice of data or description of measurement methods and procedures applied | Calculated according to the latest version of VT0011. Published information by the national utility is used to ensure the grid emission factor reflects the national grid <sup>7</sup> . Data relating to carbon credit projects was obtained from project pages on the respective registries. |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                                                                                                                                                                                             |
| Comments                                                                                     | -                                                                                                                                                                                                                                                                                              |

|                                                                                              |                                                                                                                    |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $EF_{CO_2,i,y}$                                                                                                    |
| Data unit                                                                                    | kgCO <sub>2</sub> /TJ                                                                                              |
| Description                                                                                  | Emission factor for the fossil fuel displaced.                                                                     |
| Source of data                                                                               | 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: energy, stationary combustion.             |
| Value applied                                                                                | Paraffin: 71,900 kgCO <sub>2</sub> /TJ<br>LPG: 63,100 kgCO <sub>2</sub> /TJ<br>Coal: 96,100 kgCO <sub>2</sub> /TJ. |
| Justification of choice of data or description of measurement methods and procedures applied | Default values from the 2006 IPCC Guidelines have been used in accordance with paragraph 32 of AMS-II.C.           |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                 |
| Comments                                                                                     | -                                                                                                                  |

|                  |                       |
|------------------|-----------------------|
| Data / Parameter | $NCV_{FOSSIL FUEL i}$ |
|------------------|-----------------------|

<sup>7</sup> Available at <https://www.eskom.co.za/dataportal/emissions/elementor-291086/>

|                                                                                              |                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data unit                                                                                    | TJ/Unit of measurement                                                                                                                                                             |
| Description                                                                                  | Net calorific value for the fossil fuel displaced.                                                                                                                                 |
| Source of data                                                                               | South African Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry                                                              |
| Value applied                                                                                | Paraffin: 0.000038 TJ/litre<br>LPG: 0.000046 TJ/kg<br>Coal: 0.024300 TJ/tonne                                                                                                      |
| Justification of choice of data or description of measurement methods and procedures applied | South African specific values were obtained from the South African Technical Guidelines. These values provide a more accurate indication of the NCV of fuels used in South Africa. |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                                                                                 |
| Comments                                                                                     | -                                                                                                                                                                                  |

|                                                                                              |                                                                                                                                                                                                                                                                                                               |                                    |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Data / Parameter                                                                             | $FC_i$                                                                                                                                                                                                                                                                                                        |                                    |
| Data unit                                                                                    | Unit of consumption                                                                                                                                                                                                                                                                                           |                                    |
| Description                                                                                  | Baseline consumption of fossil fuel i in year y.                                                                                                                                                                                                                                                              |                                    |
| Source of data                                                                               | Baseline survey.                                                                                                                                                                                                                                                                                              |                                    |
| Value applied                                                                                | Fossil Fuel i                                                                                                                                                                                                                                                                                                 | Baseline consumption               |
|                                                                                              | Paraffin                                                                                                                                                                                                                                                                                                      | 224.6 litres/year/adult equivalent |
|                                                                                              | LPG                                                                                                                                                                                                                                                                                                           | 39.1 kg/year/adult equivalent      |
|                                                                                              | Coal                                                                                                                                                                                                                                                                                                          | 1.3 tonnes/year/adult equivalent   |
| Justification of choice of data or description of measurement methods and procedures applied | The baseline consumption is used in accordance with paragraph 32 of AMS-II.C. The values are based on surveys conducted in accordance with the CDM sampling guidance.                                                                                                                                         |                                    |
| Purpose of Data                                                                              | Calculation of baseline emissions                                                                                                                                                                                                                                                                             |                                    |
| Comments                                                                                     | During the survey to establish the baseline consumption, the required precision of 10% was not met. Therefore, the lower bound value was used in accordance with paragraph 46 of AMS-II.G. As discussed in Section 3.1, paraffin and coal emission reductions have been excluded from this monitoring report. |                                    |

|                  |          |
|------------------|----------|
| Data / Parameter | $\rho_i$ |
| Data unit        | kW       |

|                                                                                                     |                                                                                                                                  |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>                                                                                  | Power rating of an electric stove <sup>8</sup>                                                                                   |
| <b>Source of data</b>                                                                               | Baseline survey.                                                                                                                 |
| <b>Value applied</b>                                                                                | 1.5                                                                                                                              |
| <b>Justification of choice of data or description of measurement methods and procedures applied</b> | The baseline consumption is used in accordance with AMS-II.C. The values are based upon the specifications of an electric stove. |
| <b>Purpose of Data</b>                                                                              | Calculation of baseline emissions.                                                                                               |
| <b>Comments</b>                                                                                     | -                                                                                                                                |

|                                                                                                     |                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Data / Parameter</b>                                                                             | $O_{i,BL}$                                                                                                                                             |
| <b>Data unit</b>                                                                                    | Hours/adult equivalent                                                                                                                                 |
| <b>Description</b>                                                                                  | Cooking time on an electric stove without a Wonderbag in year y.                                                                                       |
| <b>Source of data</b>                                                                               | Baseline survey.                                                                                                                                       |
| <b>Value applied</b>                                                                                | 60                                                                                                                                                     |
| <b>Justification of choice of data or description of measurement methods and procedures applied</b> | The baseline cooking time is used in accordance with AMS-II.C. The values are based on surveys conducted in accordance with the CDM sampling guidance. |
| <b>Purpose of Data</b>                                                                              | Calculation of baseline emissions.                                                                                                                     |
| <b>Comments</b>                                                                                     | -                                                                                                                                                      |

**Fixed parameters specific to AMS-II.G.**

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $f_{NRB,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Data unit                                                                                    | Fraction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Description                                                                                  | Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source of data                                                                               | Official statistics and historical data sets                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Value applied                                                                                | 0.71                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Justification of choice of data or description of measurement methods and procedures applied | <p>The source of data to determine the total annual consumption of wood (parameter H in AMS-II.G) in the absence of the project activity in the country are the official statistics from the latest Energy Balance for South Africa (2017), published by the Department of Mineral Resources and Energy. The biomass fraction in the energy balance was converted to tonnes/year using the officially approved NCV value for wood, as per the 2017 South African Technical Guidelines (Table A1), published by the Department of Environment, Forestry and Fisheries.</p> <p>The source of the mean annual increment of woody biomass growth per hectare of forest areas is the subtropical dry forest value for Africa, as per the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 4, Chapter 4_(Table 4.9).</p> <p>The sources of data to determine the natural forest cover in the country were derived from historical data sets in the Global Forest Watch datasets from Global Land Analysis &amp; Discovery.</p> <p>The sources of data to determine the proportion of protected natural forest cover in the country were derived from historical data sets in the country profile for South Africa on the Protected Planet website.</p> <p>See Appendix 1 for more detailed information.</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Comments                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                  |                                                                                                                                                                                                                                  |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | $MAI_{forest,i}$ , $MAI_{other,i}$                                                                                                                                                                                               |
| Data unit        | t/ha/yr                                                                                                                                                                                                                          |
| Description      | <p>Mean Annual Increment of woody biomass growth per hectare in sub-category i of forest areas.</p> <p>Mean Annual Increment of woody biomass growth per hectare in subcategory i of other land areas in the relevant period</p> |
| Source of data   | The following data source may be used:                                                                                                                                                                                           |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                        |                         |                        |       |     |   |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------|------------------------|-------|-----|---|
|                                                                                              | <p>a) Global Forest Resources Assessment 2000 by the FAO for “Distribution of total forest area by ecological zone” (Table 14): and/or</p> <p>b) 2006 IPCC Guidelines for National Greenhouse Gas Inventories for “Above-ground biomass growth rates (t/ha-yr) for different ecological zones” (Chapter 4, Table 4.9). Use a weighted average based on the forest area of two different age categories (i.e. above and below 20 years), if such data is available. Otherwise, use a simple average of the two age categories.</p> <p>c) National studies or government data or official statistics. The most recent available data shall be used. However, the vintage of the above data shall not be before year 2000</p> |                        |                         |                        |       |     |   |
| Value applied                                                                                | <table><tr><td></td><td>MAI<sub>forest,I</sub></td><td>MAI<sub>other,I</sub></td></tr><tr><td>Value</td><td>2.2</td><td>0</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                        | MAI <sub>forest,I</sub> | MAI <sub>other,I</sub> | Value | 2.2 | 0 |
|                                                                                              | MAI <sub>forest,I</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MAI <sub>other,I</sub> |                         |                        |       |     |   |
| Value                                                                                        | 2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0                      |                         |                        |       |     |   |
| Justification of choice of data or description of measurement methods and procedures applied | <p>The source of the mean annual increment of woody biomass growth per hectare of forest areas is the subtropical dry forest value for Africa, as per the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 4, Chapter 4_(Table 4.9).</p> <p>See Appendix 1 for details</p>                                                                                                                                                                                                                                                                                                                                                                                                      |                        |                         |                        |       |     |   |
| Purpose of Data                                                                              | Calculation of the fraction of non-renewable biomass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                         |                        |       |     |   |
| Comments                                                                                     | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                         |                        |       |     |   |

|                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter | F <sub>forest,I</sub> , F <sub>other,I</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Data unit        | ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description      | <p>Extent of forest in sub-category i</p> <p>Extent of other wooded land in sub-category i</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Source of data   | <p>The following data source may be used:</p> <p>a) Global Forest Resources Assessment 2015 by the Food and Agriculture Organization of the United Nations (FAO);</p> <p>b) Official statistics;</p> <p>c) Project-specific survey data</p> <p>If the value of fNRB is calculated for a project area for the year “y”, and during this year a decrease in the forest area is projected to occur, the extent of the forest area available to provide woody biomass to the users can correspond to the forest area (hectares) at the beginning of the year “y”, or the average of</p> |

|                                                                                              |                                                                                                                                                                                                                                         |                |               |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------|
|                                                                                              | the values of the forest area at the beginning and at the end of the year “y”.                                                                                                                                                          |                |               |
| Value applied                                                                                |                                                                                                                                                                                                                                         | $F_{forest,l}$ | $F_{other,l}$ |
|                                                                                              | Value                                                                                                                                                                                                                                   | 3,923,142      | 0             |
| Justification of choice of data or description of measurement methods and procedures applied | <p>The sources of data to determine the natural forest cover in the country were derived from historical data sets in the Global Forest Watch datasets from Global Land Analysis &amp; Discovery.</p> <p>See Appendix 1 for details</p> |                |               |
| Purpose of Data                                                                              | Calculation of the fraction of non-renewable biomass                                                                                                                                                                                    |                |               |
| Comments                                                                                     | -                                                                                                                                                                                                                                       |                |               |

|                                                                                              |                                                                                                                                                                                                                                                                                                                                |              |             |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| Data / Parameter                                                                             | $P_{forest}$ , $P_{other}$                                                                                                                                                                                                                                                                                                     |              |             |
| Data unit                                                                                    | ha                                                                                                                                                                                                                                                                                                                             |              |             |
| Description                                                                                  | <p>Extent of non-accessible area (e.g. protected area where extraction of wood is prohibited, geographically remote area) within forest areas.</p> <p>Extent of non-accessible area (e.g. projected area where extraction of wood is prohibited, geographically remote area) within other wooded land areas.</p>               |              |             |
| Source of data                                                                               | <p>The following data source may be used for the data on protected area:</p> <p>a) Global Forest Resources Assessment 2015 by the Food and Agriculture Organization of the United Nations (FAO)</p> <p>b) National studies or government data or official statistics.</p> <p>The most recent available data shall be used.</p> |              |             |
| Value applied                                                                                |                                                                                                                                                                                                                                                                                                                                | $P_{forest}$ | $P_{other}$ |
|                                                                                              | Value                                                                                                                                                                                                                                                                                                                          | 346,160      | 0           |
| Justification of choice of data or description of measurement methods and procedures applied | <p>The sources of data to determine the proportion of protected natural forest cover in the country were derived from historical data sets in the country profile for South Africa on the Protected Planet website.</p> <p>See Appendix 1 for details</p>                                                                      |              |             |
| Purpose of Data                                                                              | Calculation of the fraction of non-renewable biomass                                                                                                                                                                                                                                                                           |              |             |
| Comments                                                                                     | -                                                                                                                                                                                                                                                                                                                              |              |             |

|                                                                                              |                                                                                                                                 |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | EF <sub>projected_fossil_fuel</sub>                                                                                             |
| Data unit                                                                                    | tCO2e/TJ                                                                                                                        |
| Description                                                                                  | Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers. |
| Source of data                                                                               | AMS-II.G: Table 2, Sub-Saharan African default value.                                                                           |
| Value applied                                                                                | 73.2                                                                                                                            |
| Justification of choice of data or description of measurement methods and procedures applied | The default value was selected in accordance with paragraph 25 of AMS-II.G.                                                     |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                              |
| Comments                                                                                     | -                                                                                                                               |

|                                                                                              |                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $\mu_y$                                                                                                                                                         |
| Data unit                                                                                    | -                                                                                                                                                               |
| Description                                                                                  | Adjustment to account for any continued use of pre-project devices during the year y.                                                                           |
| Source of data                                                                               | AMS-II.G.                                                                                                                                                       |
| Value applied                                                                                | 1                                                                                                                                                               |
| Justification of choice of data or description of measurement methods and procedures applied | AMS-II.G requires the use of a default adjustment factor of 1.0 in project activities that apply any equations in the methodology other than equations 7 and 9. |
| Purpose of Data                                                                              | Calculation of baseline emissions                                                                                                                               |
| Comments                                                                                     | -                                                                                                                                                               |

|                                                   |                                                                                                                                         |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                  | NCV <sub>biomass</sub>                                                                                                                  |
| Data unit                                         | TJ/tonne                                                                                                                                |
| Description                                       | Net calorific value of the non-renewable woody biomass that is substituted.                                                             |
| Source of data                                    | IPCC default for wood fuel, as per AMS-II.G.                                                                                            |
| Value applied                                     | 0.0156                                                                                                                                  |
| Justification of choice of data or description of | AMS-II.G allows for the use of a default wood fuel value of 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried'. |

|                                            |                                    |
|--------------------------------------------|------------------------------------|
| measurement methods and procedures applied |                                    |
| Purpose of Data                            | Calculation of baseline emissions. |
| Comments                                   | -                                  |

|                                                                                              |                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                                             | $B_{old,i,j}$                                                                                                                                                                                                                                                                        |
| Data unit                                                                                    | Tonnes/year/adult equivalent                                                                                                                                                                                                                                                         |
| Description                                                                                  | Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device.                                                                                               |
| Source of data                                                                               | Baseline survey.                                                                                                                                                                                                                                                                     |
| Value applied                                                                                | 1.15                                                                                                                                                                                                                                                                                 |
| Justification of choice of data or description of measurement methods and procedures applied | <p>The baseline survey was conducted in accordance with the CDM sampling guidance and the internationally Recognized Kitchen Performance Test Protocol provided by the Clean Cooking Alliance.</p> <p>The survey followed the requirements set out by the CDM sampling guidance.</p> |
| Purpose of Data                                                                              | Calculation of baseline emissions.                                                                                                                                                                                                                                                   |
| Comments                                                                                     | -                                                                                                                                                                                                                                                                                    |

## 4.2 Data and Parameters Monitored

### Monitored parameters required by AMS-II.C.

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $E_{BL,y}$                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Data unit                                                       | kWh                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description                                                     | Energy (specifically electricity) consumption for the baseline in year y.                                                                                                                                                                                                                                                                                                                                                              |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Description of measurement methods and procedures to be applied | <p>Calculated based on sample data sets. The samples are carried out in accordance with the CDM's sampling standard and guidance.</p> <p>Energy consumption for the project activity is calculated by determining the electrical power demand (<math>p_i</math>), a fixed parameter, of the electric stoves upon which operational Wonderbags are used (<math>n_i</math>). This value is multiplied by the average number of hours</p> |

|                                   |                                                                                                                                                                        |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | that are used to cook food, using a Wonderbag. The calculation also considers the grid transmission and distribution losses ( $l_y$ ).                                 |
| Frequency of monitoring/recording | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                 |
| Value monitored                   | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet. |
| Monitoring equipment              | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                              |
| QA/QC procedures to be applied    | n/a as this parameter is calculated and not monitored.                                                                                                                 |
| Purpose of the data               | Calculation of project emissions.                                                                                                                                      |
| Calculation method                | $E_{BL,y} = \sum_i (n_i \times \rho_i \times o_{i,BL} / (1 - l_y))$                                                                                                    |
| Comments                          | -                                                                                                                                                                      |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $E_{PJ,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Data unit                                                       | kWh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Description                                                     | Energy (specifically electricity) consumption for the project activity in year y.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Description of measurement methods and procedures to be applied | <p>Calculated based on sample data sets. The samples were carried out in accordance with the CDM's sampling standard and guidance.</p> <p>The precision value for this parameter was achieved in the User Habit Survey, i.e. precision was below the 10% threshold.</p> <p>Energy consumption for the project activity is calculated by determining the electrical power demand (<math>\rho_i</math>), a fixed parameter, of the electric stoves upon which operational Wonderbags are used (<math>n_i</math>), multiplied by the average number of hours that are used to cook food, using a Wonderbag. The calculation also considers the grid transmission and distribution losses (<math>l_y</math>).</p> |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                |                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------|
| Monitoring equipment           | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags. |
| QA/QC procedures to be applied | n/a as this parameter is calculated and not monitored.                                    |
| Purpose of the data            | Calculation of project emissions.                                                         |
| Calculation method             | $E_{P,y} = \sum_t \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$                      |
| Comments                       | -                                                                                         |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $n_i$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Data unit                                                       | Wonderbags                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Description                                                     | Number of pieces of equipment of the group $i$ baseline equipment retrofitted or that would have been retrofitted.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Source of data                                                  | Monitored in a database.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description of measurement methods and procedures to be applied | <p>Calculated based on a representative sample. Sampling standard was used for determining the sample size to achieve 95/10 confidence precision.</p> <p>A discount shall be applied based on the percentage of devices operational as determined by the sample survey, e.g. if surveys shows that 10% of the devices is non-operational, an adjustment factor of 0.9 shall be applied to number of project devices commissioned in a particular batch.</p> <p>The results of User Habit Survey indicate a 100% operational rate and hence no discount was applied.</p> |
| Frequency of monitoring/recording                               | Periodic sampling. Data sets are recorded on an ongoing basis and aggregated on an annual basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                                                                                                                                                                                                                                  |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| QA/QC procedures to be applied                                  | n/a.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Calculation method | <p>The number of electrical and other fossil fuel stoves is calculated based on the proportion of users cooking on such stoves, with a Wonderbag, derived from sample surveys.</p> <p>The numbers of operational electrical stoves and other fossil fuel stoves are calculated using two different formulas:</p> <ul style="list-style-type: none"> <li>- The number of electrical stoves in use is calculated as follows: <math display="block">n_i = N_w \times u_w \times u_{ELEC,w} (1 - f_{rate,w}) * t_w</math> </li> <li>- The number of other fossil fuel stoves in use is calculated as follows: <math display="block">n_i = N_w \times u_w \times u_{FOSSIL,i,w} \times (1 - f_{rate,w}) * t_w</math> </li> </ul> |
| Comments           | <p>The <math>n_i</math> parameter is used to determine the number of both electrical and other fossil stoves.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                                                                 |                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $N_w$                                                                                                                                                                                                                                                                                                       |
| Data unit                                                       | Wonderbags                                                                                                                                                                                                                                                                                                  |
| Description                                                     | The number of Wonderbags of type w distributed.                                                                                                                                                                                                                                                             |
| Source of data                                                  | Monitored in a database.                                                                                                                                                                                                                                                                                    |
| Description of measurement methods and procedures to be applied | Each Wonderbag that is distributed into the field is recorded in a database. The database records include the serial numbers of the bags, the distributing entity (for example, particular NGOs), contact details of the people that receive the bags and the dates that the bags are distributed to users. |
| Frequency of monitoring/recording                               | Continuous.                                                                                                                                                                                                                                                                                                 |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                      |
| Monitoring equipment                                            | Central database.                                                                                                                                                                                                                                                                                           |
| QA/QC procedures to be applied                                  | n/a.                                                                                                                                                                                                                                                                                                        |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                                                                                                                                                           |
| Calculation method                                              | n/a as this is a monitored parameter.                                                                                                                                                                                                                                                                       |
| Comments                                                        | -                                                                                                                                                                                                                                                                                                           |

|                                                                 |                                                                                                                                                                      |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $o_i$                                                                                                                                                                |
| Data unit                                                       | Hours                                                                                                                                                                |
| Description                                                     | Operating hours (i.e. cooking time using a Wonderbag) of group of $i$ project devices (i.e. electrical stoves) in the time interval $t$ in year $y$                  |
| Source of data                                                  | User Habit Surveys                                                                                                                                                   |
| Description of measurement methods and procedures to be applied | The cooking time, using a Wonderbag, was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance. |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                               |
| Value monitored                                                 | 19.89                                                                                                                                                                |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                            |
| QA/QC procedures to be applied                                  | n/a.                                                                                                                                                                 |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                    |
| Calculation method                                              | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                            |
| Comments                                                        | -                                                                                                                                                                    |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $l_y$                                                                                                                                                                                                                                                                                                                                                                    |
| Data unit                                                       | %                                                                                                                                                                                                                                                                                                                                                                        |
| Description                                                     | Average annual grid loss of the national South African grid including transmission and distribution.                                                                                                                                                                                                                                                                     |
| Source of data                                                  | Eskom Annual Reports.                                                                                                                                                                                                                                                                                                                                                    |
| Description of measurement methods and procedures to be applied | <p>The Methodology states that "This value shall not include non-technical losses such as commercial losses (e.g. theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country.</p> <p>This value is determined from recent data published by the national utility, Eskom.</p> |

|                                   |                                                                                                                                                          |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Frequency of monitoring/recording | Annual.                                                                                                                                                  |
| Value monitored                   | 0.123                                                                                                                                                    |
| Monitoring equipment              | n/a as this value is determined using the Eskom Annual Report, published in 2025. The losses for 2025 as well as previous years can be found on page 141 |
| QA/QC procedures to be applied    | n/a as this value is determined using the Eskom Annual Report.                                                                                           |
| Purpose of the data               | Calculation of project emissions.                                                                                                                        |
| Calculation method                | n/a as this value is determined using the Eskom Annual Reports.                                                                                          |
| Comments                          | -                                                                                                                                                        |

|                                                                 |                                                                                                                                                                         |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | U <sub>w</sub>                                                                                                                                                          |
| Data unit                                                       | %                                                                                                                                                                       |
| Description                                                     | Share of users cooking with a Wonderbag in year y.                                                                                                                      |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                     |
| Description of measurement methods and procedures to be applied | The share of users cooking with a Wonderbag was established through sampling. The surveys were carried out in accordance with the CDM's sampling standard and guidance. |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                  |
| Value monitored                                                 | 91.18%                                                                                                                                                                  |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                               |
| QA/QC procedures to be applied                                  | N/A.                                                                                                                                                                    |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                       |
| Calculation method                                              | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                               |
| Comments                                                        | -                                                                                                                                                                       |

|                                                                 |                                                                                                                                                                                 |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $u_{ELEC,w}$                                                                                                                                                                    |
| Data unit                                                       | %                                                                                                                                                                               |
| Description                                                     | Share of users cooking with electric stoves with a Wonderbag in year y.                                                                                                         |
| Source of data                                                  | User Habit Surveys                                                                                                                                                              |
| Description of measurement methods and procedures to be applied | The share of users cooking with electric stoves was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance. |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                          |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.          |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                       |
| QA/QC procedures to be applied                                  | N/A                                                                                                                                                                             |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                               |
| Calculation method                                              | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                       |
| Comments                                                        | -                                                                                                                                                                               |

|                                                                 |                                                                                                                                                                                        |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $E_{BL,FOSSIL,i,y}$                                                                                                                                                                    |
| Data unit                                                       | TJ                                                                                                                                                                                     |
| Description                                                     | Baseline energy consumption of fossil fuel i in year y.                                                                                                                                |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                    |
| Description of measurement methods and procedures to be applied | The baseline consumption of the different fossil fuels was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance. |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                                 |

|                                |                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Value monitored                | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                          |
| Monitoring equipment           | The monitoring equipment used to measure fossil fuel consumption includes the use of hand-held scales, foot scales and measuring jugs. The monitoring equipment is typically used in residential or household applications and therefore do not have accuracy ranges or serial numbers associated with meters or equipment utilised in industrial applications. |
| QA/QC procedures to be applied | N/A                                                                                                                                                                                                                                                                                                                                                             |
| Purpose of the data            | Calculation of baseline emissions.                                                                                                                                                                                                                                                                                                                              |
| Calculation method             | $E_{BL,FOSSIL,i,y} = FC_i \times NCV_{FOSSIL FUEL i}$                                                                                                                                                                                                                                                                                                           |
| Comments                       | -                                                                                                                                                                                                                                                                                                                                                               |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $FC_{PJ,i}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Data unit                                                       | Unit of consumption                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description                                                     | Project activity energy consumption of fossil fuel i in year y.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description of measurement methods and procedures to be applied | <p>The project activity consumption of the different fossil fuels was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance. The results of the User Habit Survey indicate that the precision values for LPG, paraffin and coal were not met, i.e. the results for these fuels were over the 10% precision threshold. As a result, the upper bound values were used in the emission reduction calculations. The upper bound values are the most conservative approach, as they assume that higher levels of fossil fuels were consumed in the project implementation and hence fewer emission reductions are achieved.</p> <p>The use of the upper bound value is aligned with paragraph 18(b)(i)(a) of the CDM Survey Sampling Standard, version 8: "If the estimates from the actual samples fail to achieve the target minimum levels of precision,<sup>16</sup> the project participants or the coordinating/managing entity shall either:</p> <p>...</p> <p>(b) Apply a correction to the estimates using one of the two options below:</p> <p>(i) Discounting the emission reduction estimates by either:</p> |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | a. Taking the lower or the upper bound, whatever is the more conservative, of the 90 or 95 per cent confidence interval, depending on the type of methodologies applied”                                                                                                                                                                                                                                                                                                                                                                      |
| Frequency of monitoring/recording | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Value monitored                   | Refer to the ‘Emission Reduction Calcs - 2023’, ‘Emission Reduction Calcs - 2024’ and ‘Emission Reduction Calcs – 2025’ tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                                                                                                                                                                                                        |
| Monitoring equipment              | <p>A hybrid monitoring approach was applied in the measurements of fossil fuels, as discussed in section 3.2.2 above.</p> <p>Where physical site visits were conducted, the monitoring equipment used to measure fossil fuel consumption included the use of hand-held scales, foot scales and measuring jugs. The monitoring equipment is typically used in residential or household applications and therefore does not have accuracy ranges or serial numbers associated with meters or equipment utilised in industrial applications.</p> |
| QA/QC procedures to be applied    | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Purpose of the data               | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Calculation method                | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Comments                          | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $E_{PJ,FOSSIL,i,y}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Data unit                                                       | TJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Description                                                     | Project activity energy consumption of fossil fuel i in year y.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description of measurement methods and procedures to be applied | <p>The project activity consumption of the different fossil fuels is established using survey samples. The surveys were carried out in accordance with the CDM’s sampling standard and guidance.</p> <p>The precision values for the measurements of gas, paraffin and coal were not achieved in the User Habit Survey, i.e. precision was above the 10% threshold. Hence, the upper bound values were used. This is the most conservative approach with respect to determining the project activity consumption of these fossil fuels. The use of the upper bound values means that the project</p> |

|                                   |                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | activity makes use of more fuels and hence there are fewer emission reductions claimed.                                                                                                                                                                                                                                                                                                                    |
| Frequency of monitoring/recording | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                                                                                                                                                                                                                                                     |
| Value monitored                   | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                                                                     |
| Monitoring equipment              | Where physical site visits were conducted, the monitoring equipment used to measure fossil fuel consumption included the use of hand-held scales, foot scales and measuring jugs. The monitoring equipment is typically used in residential or household applications and therefore do not have accuracy ranges or serial numbers associated with meters or equipment utilised in industrial applications. |
| QA/QC procedures to be applied    | N/A                                                                                                                                                                                                                                                                                                                                                                                                        |
| Purpose of the data               | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                                                                          |
| Calculation method                | $E_{PJ,FOSSIL,i,y} = FC_{PJ,i} \times NCV_{FOSSIL FUEL i}$                                                                                                                                                                                                                                                                                                                                                 |
| Comments                          | -                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                 |                                                                                                                                                                                  |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $\mu_{FOSSIL,i,w}$                                                                                                                                                               |
| Data unit                                                       | %                                                                                                                                                                                |
| Description                                                     | Share of users cooking with fossil fuel i in year y                                                                                                                              |
| Source of data                                                  | User Habit Surveys                                                                                                                                                               |
| Description of measurement methods and procedures to be applied | The share of users cooking with each fossil fuel was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance. |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                           |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.           |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                        |

|                                |                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------|
| QA/QC procedures to be applied | N/A                                                                                       |
| Purpose of the data            | Calculation of project emissions                                                          |
| Calculation method             | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags. |
| Comments                       | -                                                                                         |

|                                                                 |                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $f_{rate,w}$                                                                                                                                                                                                                                                                                                                                             |
| Data unit                                                       | %                                                                                                                                                                                                                                                                                                                                                        |
| Description                                                     | Failure rate of Wonderbags.                                                                                                                                                                                                                                                                                                                              |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                                                                                                                                                                                                      |
| Description of measurement methods and procedures to be applied | The failure rate was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance.                                                                                                                                                                                                         |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                                                                                                                                                                                                   |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                                                                                                                                                                   |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags. The failure rate is determined through the User Habit Survey, where respondents are asked whether "the "Wonderbag is still used for cooking?". All the survey respondents indicated "yes" to this question. Therefore the failure rate was determined to be 0. |
| QA/QC procedures to be applied                                  | N/A                                                                                                                                                                                                                                                                                                                                                      |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                                                                                                                                                                                                        |
| Calculation method                                              | n/a as monitoring is undertaken on a sample basis of distributed Wonderbags.                                                                                                                                                                                                                                                                             |
| Comments                                                        | -                                                                                                                                                                                                                                                                                                                                                        |

|                                                                 |                                                                                                                                                                        |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $t_w$                                                                                                                                                                  |
| Data unit                                                       | %                                                                                                                                                                      |
| Description                                                     | Active time in the monitoring period for the full population of Wonderbags type w.                                                                                     |
| Source of data                                                  | User Habit Surveys.                                                                                                                                                    |
| Description of measurement methods and procedures to be applied | The active time was established using survey samples. The surveys were carried out in accordance with the CDM's sampling standard and guidance.                        |
| Frequency of monitoring/recording                               | Periodic sampling. Recording of data is aggregated on an annual basis.                                                                                                 |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet. |
| Monitoring equipment                                            | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                              |
| QA/QC procedures to be applied                                  | N/A                                                                                                                                                                    |
| Purpose of the data                                             | Calculation of project emissions.                                                                                                                                      |
| Calculation method                                              | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                              |
| Comments                                                        | -                                                                                                                                                                      |

#### Monitored parameters required by AMS-II.G.

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $N_{y,i,j}$                                                                                                                                                                                                                                                                                                                                                                |
| Data unit                                                       | Wonderbags                                                                                                                                                                                                                                                                                                                                                                 |
| Description                                                     | Number of project devices of type i (specifically biomass stoves) and batch j operating during year y.                                                                                                                                                                                                                                                                     |
| Source of data                                                  | Monitored in a database.                                                                                                                                                                                                                                                                                                                                                   |
| Description of measurement methods and procedures to be applied | Calculated based on a representative sample. The Sampling Standard was used for determining the sample size to achieve 95/10 confidence precision. The standard requires that a discount shall be applied based on the percentage of devices operational as determined by the sample survey, e.g. if surveys shows that 10% of the devices is non-operating, an adjustment |

|                                   |                                                                                                                                                                                                                    |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   | <p>factor of 0.9 shall be applied to number of project devices commissioned in a particular batch.</p> <p>The results of User Habit Survey indicate a 100% operational rate and hence no discount was applied.</p> |
| Frequency of monitoring/recording | Periodic sampling. Data sets are recorded on an ongoing basis and aggregated on an annual basis.                                                                                                                   |
| Value monitored                   | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                             |
| Monitoring equipment              | n/a as monitoring is undertaken on a sample basis of distributed Wonderbags.                                                                                                                                       |
| QA/QC procedures to be applied    | N/A                                                                                                                                                                                                                |
| Purpose of the data               | Calculation of project emissions.                                                                                                                                                                                  |
| Calculation method                | The number of biomass stoves is calculated based on the proportion of users cooking on biomass stoves, with a Wonderbag, derived from sample surveys.                                                              |
| Comments                          | -                                                                                                                                                                                                                  |

|                                                                 |                                                                                                                                                                                                              |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Data / Parameter                                                | $B_{\text{new,KPT},i,j}$                                                                                                                                                                                     |
| Data unit                                                       | Tonnes                                                                                                                                                                                                       |
| Description                                                     | Annual quantity of woody biomass used in tonnes per project device of type i                                                                                                                                 |
| Source of data                                                  | User Habit Surveys                                                                                                                                                                                           |
| Description of measurement methods and procedures to be applied | <p>Measured as per the KPT protocol. The KPT was carried out in accordance with the KPT Protocol guidelines listed by the Clean Cooking Alliance.</p> <p>The precision level was met for this parameter.</p> |
| Frequency of monitoring/recording                               | Periodic sampling and recorded on an annual basis                                                                                                                                                            |
| Value monitored                                                 | Refer to the 'Emission Reduction Calcs - 2023', 'Emission Reduction Calcs - 2024' and 'Emission Reduction Calcs - 2025' tabs in the in the ER calculation spreadsheet.                                       |
| Monitoring equipment                                            | Where physical site visits were conducted, the monitoring equipment used to measure biomass consumption included the use of hand-held and/or foot scales. The monitoring equipment                           |

|                                |                                                                                                                                                                                                 |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | is typically used in residential or household applications and therefore do not have accuracy ranges or serial numbers associated with meters or equipment utilised in industrial applications. |
| QA/QC procedures to be applied | N/A                                                                                                                                                                                             |
| Purpose of the data            | Calculation of project emissions.                                                                                                                                                               |
| Calculation method             | n/a as monitoring is undertaken on a sample basis of distributed, operational Wonderbags.                                                                                                       |
| Comments                       | The value for Bnew will not be affected by seasonal changes. Therefore, the surveys do not need to be conducted on days that take seasonal changes into account.                                |

## 4.3 Monitoring Plan

### **DATA COLLECTION AND MANAGEMENT METHODS**

The methods for measuring, recording, storing, aggregating, collating and reporting data and parameters in this monitoring period are described below.

Each completed Wonderbag is equipped with a label stating the unique barcoded serial number which is used for references and monitoring. The information contained in the barcode includes:

- Date on which the bag was manufactured;
- The serial number of the bag;
- The date on which the bag is scheduled for distributed, i.e. scheduled to leave the factory premises;
- The details of the entity responsible for distributing the bag (e.g. various NGOs and other entities);
- The anticipated province/ town/ community in which the bags is expected to be distributed.

The unique barcoded serial numbers provide for the basis of monitoring activities and prevent instances of double-counting.

Each barcode on a manufactured Wonderbag is scanned using an electronic device, such as a smartphone or tablet, prior to leaving the factory for distribution purposes. The barcode, and related information, is thus stored in an electronic database. In instances where the bags are

baled (i.e. multiple bags are packed in plastic containers) for bulk distribution, the bales have their own unique barcodes which include the following information:

- The serial numbers of all bags included in the bale;
- The date on which the bag is scheduled for distributed, i.e. scheduled to leave the factory premises;
- The details of the entity responsible for distributing the bag (e.g. various NGOs).

The Wonderbags are transported to distributing entities around the country, largely by road. The Wonderbags are distributed to users by distributing entities.

Wonderbag's data collection and management process has a strong technological focus which includes the secure, cloud-based storage of data. Wonderbag has been developing and is testing an app, which will enable the collection of data on a much larger scale. The app will also provide Wonderbag current information on Wonderbag stock location, activity of distribution partners and data sets that have been collected.

The envisaged Wonderbag app flow is described in the following figure:

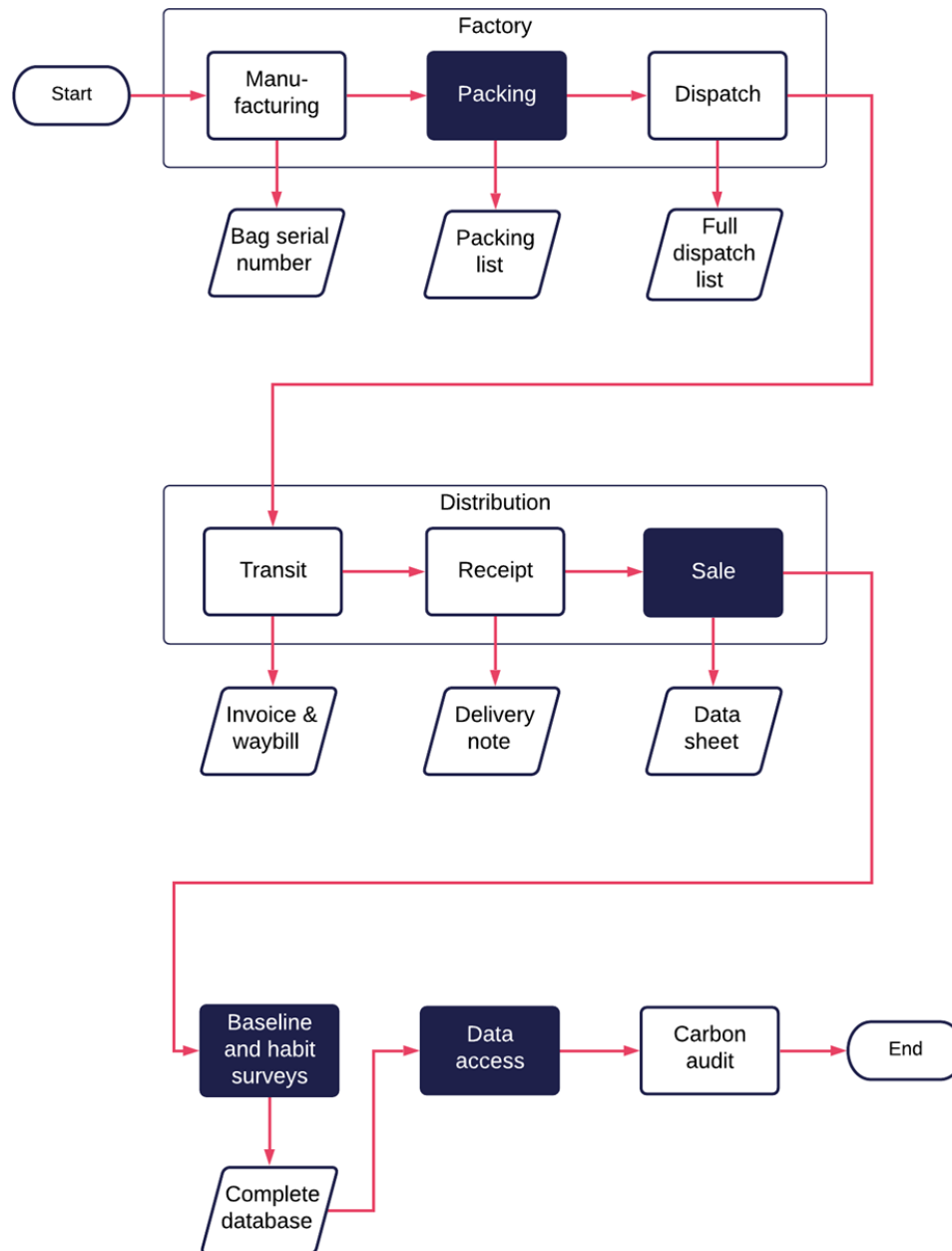


**Figure 2: Wonderbag app flow**

### Distribution questionnaires:

The distributing entities use standardized distribution questionnaires for recording the contact details and relevant information (e.g. type of cook stove used, type of fuel used for cooking, number of children in the household, number of females in the household, number of males in the household, how much time do they spend cooking before and after using the Wonderbag, etc.) of each Wonderbag user, against the respective serial number of the provided Wonderbag.

The data sets from the distribution questionnaires are captured directly into an application on an electronic device, such as a smartphone or tablet. The distributing entities may also use manual recording methods where the required electronic device is not available at the time of distributing the bag. The manual data sets are subsequently uploaded and captured into the electronic database at a later stage.

Wonderbag users are encouraged to update their contact and personal information recorded in the distribution questionnaires. Users may update their contact details through a variety of means, including direct contact with Wonderbag representatives that may live in local communities and/or field researchers undertaking monitoring surveys, as well as other electronic means such as by email or in future, potentially by logging on to the Wonderbag app.

The Wonderbags and related individual users that are captured in the database form the total population upon which the user habit surveys are based and respective sample (target) populations are drawn.

### **ONCE-OFF BASELINE SURVEY**

The baseline survey is a once off survey used to establish baseline and fixed parameters at the validation of the grouped project. The baseline survey was conducted according to the CDM Sampling Standard. A total of 990 household interviews and measurements were conducted where relevant across all fuels included in the grouped project. Each household was surveyed 3 times in accordance with the Kitchen Performance Test protocol procedure. The surveys were stratified as follows:

- Electricity – 171 households
- Gas – 35 households
- Paraffin – 15 households
- Coal – 9 households
- Wood – 100 households

The arithmetic mean of all survey results was calculated along with the standard deviation and precision. A 95% confidence was applied in the calculations. These values were stratified by fuel type and are presented in the table below. Where the precision was above the 10% threshold from the Sampling Standard, the lower bound was applied in the emission reduction calculations to be conservative.

| Fuel        | Mean                    | Standard deviation | Precision |
|-------------|-------------------------|--------------------|-----------|
| Electricity | 26.19 minutes/day/adult | 20.26              | 4.66%     |
| Gas         | 0.25 kg/day/adult       | 0.49               | 35.60%    |
| Paraffin    | 0.71 litres/day/adult   | 0.63               | 25.93%    |

| Fuel | Mean              | Standard deviation | Precision |
|------|-------------------|--------------------|-----------|
| Coal | 4.08 kg/day/adult | 2.79               | 26.88%    |
| Wood | 2.52 kg/day/adult | 2.83               | 10.66%    |

#### **fNRB for baseline calculation of emission reductions arising from wood users**

The fNRB, or fraction of woody biomass saved by the project activity that can be established as non-renewable biomass, was determined at validation of the grouped project. The fNRB for South Africa was determined to be 0.71 (71%).

The sources of data to determine the total annual consumption of wood (parameter H in AMS-II.G) in the absence of the project activity in South Africa are the official statistics from the Energy Balance for South Africa (2017) which was available at the time of validation, published by the Department of Mineral Resources and Energy. The biomass fraction in the energy balance was converted to tonnes/year using the officially approved NCV value for wood, as per the 2017 South African Technical Guidelines (Table A1), published by the Department of Environment, Forestry and Fisheries.

The source of the mean annual increment of woody biomass growth per hectare of forest areas is the subtropical dry forest value for Africa, as per the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Volume 4, Chapter 4\_(Table 4.9).

The sources of data to determine the natural forest cover in the country were derived from historical data sets in the Global Forest Watch datasets from Global Land Analysis & Discovery.

The sources of data to determine the proportion of protected natural forest cover in the country were derived from historical data sets in the country profile for South Africa on the Protected Planet website.

See Appendix 1 of the registered Project Description for more detailed information.

#### **Electric stove ratings:**

The baseline and project electric stove rating used in this verification of the Grouped Project, of 1.5kW, is compared with other information sources, including government reports, peer reviewed literature and independent studies.

For example, the South African government has published two applicable guidelines<sup>9, 10</sup> which reference the average power ratings of different household appliances in the City of Cape Town. The guidelines provide a list of generic wattage ratings for some appliances used in the Western Cape province in South Africa. The guidance documents further indicate that these generic wattage readings can be used if there is no indication on the appliance, indicating that these values are considered as standard values. The guidelines indicate the following standard wattage values for cooking appliances:

- Electric stove: 3,000 watts
- Hotplate large: 2,400 watts
- Hotplate small: 1,275 watts

Two of the values listed above are higher than the assumed uniform 1.5kW (1,500 watts) applied in the Group Project calculations. Furthermore, in accordance with the FARs issued in the previous third verification, the stove rating was surveyed in the user habit surveys for the fourth monitoring period. The latest survey resulted in an average rating of 1.95kW which is significantly higher than the assumed 1.5kW. Thus the 1.5kW rating value is utilised as it is conservative as it results in lower baseline emissions and will therefore prevent over-issuance by a significant margin.

The use of a 1.5kW stove rating in the baseline also provides for events where users may use a lower setting while bringing the food to a boil prior to putting the pot into the heat-retention Wonderbag.

The values in the government reports, as mentioned above, are used as proxies for the values across the country.

In addition, the following table outlines the different types and ratings of commonly available stove plates in South Africa, as identified in a water boil study undertaken by Global Carbon Exchange in 2012.

---

<sup>9</sup> Available at:  
[https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/Smart\\_Living\\_Audit\\_Guide\\_for\\_Your\\_Home.pdf](https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/Smart_Living_Audit_Guide_for_Your_Home.pdf)

<sup>10</sup> Available at:  
[https://resource.capetown.gov.za/documentcentre/Documents/Procedures,%20guidelines%20and%20regulations/SOH\\_Audit\\_Energy\\_cheat\\_sheet.pdf](https://resource.capetown.gov.za/documentcentre/Documents/Procedures,%20guidelines%20and%20regulations/SOH_Audit_Energy_cheat_sheet.pdf)

| Electric Stove Plate Type                  | Power Rating         |
|--------------------------------------------|----------------------|
| Table-top 2 Plate stove, solid plate       | 1.5kW <sup>11</sup>  |
| Table-top 2 Plate stove, coil plate        | 1.35kW <sup>12</sup> |
| 4 Plate stove with oven, solid plate       | 1.5kW <sup>13</sup>  |
| 4 Plate stove with oven, coil plate        | 1.35kW <sup>14</sup> |
| 4 Plate stove with oven, glass top         | 2kW <sup>15</sup>    |
| 2 Plate stove with small oven, solid plate | 1.5kW <sup>16</sup>  |

The study conducted in 2012 for the above stove types (solid, coil and glass) made use of a water boil test to compare the electricity consumption of various stove plate types. This study measured the electricity consumption to boil 1.5litres of water using each stove plate type. The result of this study indicated that consumption varied by -4% to 6.8% in relation to the reference stove plate type. No significant difference in energy consumption is thus evident based on the type of stove plate. The reference stove in this study was a table-top 2 plate coil stove.

The result of a -4% to 6.8% variation in total energy consumption therefore falls within the range of +/- 10% as specified in paragraph 20 of AMS-II.C, and satisfies the requirement of paragraph 40 of AMS-II.C that states:

*“... monitoring shall consist of monitoring either the “power” and “operating hours” or the “energy use” of the equipment installed using an appropriate method. Appropriate methods include: ...  
(b) Metering the “energy use” of an appropriate sample of the project equipment installed.”*

The listed stove ratings above are either aligned with or larger than the rating of 1.5kW applied in this verification. Accordingly, the examples listed above also confirm that the use of a 1.5kW rating value is conservative, as it results in lower baseline emissions compared to other listed

<sup>11</sup> STOVE DEFY 60 cm GE 3B 1S ELECTRIC OVEN DGS179 Spec

<sup>12</sup> <https://www.builders.co.za/Electrical/Electrical-Tools-and-Accessories/Stove-Plates/Stove-Plate-Spiral-150mm-1350w/p/000000000000027064>

<sup>13</sup> STOVE DEFY 60 cm GE 3B 1S ELECTRIC OVEN DGS179 Spec

<sup>14</sup> <https://www.builders.co.za/Electrical/Electrical-Tools-and-Accessories/Stove-Plates/Stove-Plate-Spiral-150mm-1350w/p/000000000000027064>

<sup>15</sup> <https://www.defy.co.za/products/built-in-sets/cooking-built-in-sets-dcb115>

<sup>16</sup> Assumed similar rating as 4 plate stove with oven as no change in stove plates. The only difference is the size of the oven between these models

electric stoves commonly used in South Africa as well as the ratings obtained through the user habit survey.

### Constant load condition

The demonstration of the constant load condition is based on the cooking habits of Wonderbag users. The calculation of the emission reductions are based on the Wonderbag users operating the stove in a constant setting (constant load condition) to bring the pot of food to a boil, and keeping that constant boiling condition, for a time period specific to the food that is being cooked. It is important that the food is maintained at a boiling condition, prior to being placed in the Wonderbag where the food continues cooking without the use of additional fuel sources, through the retention of the residual heat in the pot of food.

Some food types require more energy to cook, while others less energy; for example, rice requires less energy, while some legumes require more energy. It should however be noted that both food types require the pot to be brought from room temperature up to boiling point. Both these food types therefore require the same amount of energy and therefore the same load setting. The fact that legumes cook longer than rice is not relevant in the case where Wonderbag is used, as the legumes will simply be left in the bag longer than rice, and contrary to the base case where more energy is required, no extra energy is required for legumes as opposed to rice.

The process of bringing a pot of food to the boil, in preparation for using a Wonderbag, does allow users to use the stove at a constant rate prior to placing the food in the Wonderbag for further cooking without additional fuel sources<sup>17</sup>. It is important that the food is maintained at a constant boiling condition, prior to being placed in the Wonderbag where the food continues cooking without the use of additional fuel sources.

The demonstration of the constant load condition is further supported by a study undertaken in 2014 by the Islamic University of Technology in Bangladesh<sup>18</sup>, in collaboration with the Programme Sustainable Energy for Development, supported by the Bangladeshi Ministry of Power, Energy and Mineral Resources and the German Federal Ministry for Economic Cooperation and Development through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

The resulting report, titled *Performance Test of Wonder Bag: A Pathway to Reduce Cooking Energy Consumption and CO<sub>2</sub> Emission*, provides a detailed quantitative analysis of possible energy savings and CO<sub>2</sub> emission reduction for cooking different food items using a Wonderbag.

<sup>17</sup> See page 209 of provided supporting doc, published by government, titled 'City of CT 2020 Smart Living Handbook ref to Wonderbag', for reference to needing to bring the pot of food to the boil before transferring to the Wonderbag for further cooking. See also instructions for use of Wonderbags at: <https://www.wonderbagworld.com/how-it-works#:~:text=To%20cook%2C%20simply%20bring%20the,the%20pot%20into%20the%20Wonderbag.&text=Cin%20the%20Wonderbag%20tightly%20with,for%20up%20to%208%20hours>.

<sup>18</sup> Source: [Wonderbag performance test](#).

The research was carried out in a controlled environment and entailed the cooking of food items using an electric Induction cooker and an LPG stove plate, with and without the use of Wonderbag. The food items assessed in the study were plain rice, plain potato, chicken curry and a mixed vegetable curry (potato, pointed gourd, spinach stem).

The report provides detailed descriptions of the cooking methods related to the four food items, with and without the use of a Wonderbag. In each test that involved cooking without a Wonderbag, the cooking methodology entailed bringing the pot of food to the boil and then reducing the power input for the duration of the cooking process and time. For example, when cooking plain rice with an Induction cooker, without the use of Wonderbag:

*“The induction cooker was switched on with full power controlled by Variac. A thermocouple has been inserted into the rice-water mixture to measure the temperature throughout the process. The temperature reached the boiling temperature 100 °C after 13 minutes. Soon after that, the power input was decreased to 75% (1.06 kW) at 15 minutes. The cooking is completed at 29 minutes, and the induction cooker is switched off.”*

However, this methodology was amended in each test that involved cooking with a Wonderbag, to mimic the Wonderbag user habits, which typically entails cooking at a constant load condition when cooking with a Wonderbag. For example, when cooking plain rice with an Induction cooker, whereafter the food is cooked further in a Wonderbag:

*“The induction cooker was switched on with 100% power (1.39 kW) controlled by Variac. A thermocouple has been inserted into the rice-water mixture to measure the temperature throughout the process. The temperature reached the boiling temperature 100 °C at 14.5 minutes. Instantly after that the pan was put inside the Wonderbag and sealed off. The pan was kept inside the Wonderbag for 35 minutes.”*

The same cooking methodologies, when assessing the cooking of food with and without a Wonderbag, were used in the rest of the study to assess the other dishes (plain potatoes, chicken and vegetable curries), using both the electric Induction cooker and LPG stove plate.

The cooking methodology related to cooking with a Wonderbag in the study supports the assumption that users of the Wonderbags in the Recipe for Change Grouped Project typically cook at a constant load condition when cooking with a Wonderbag.

### Electricity consumption

The values used in the Grouped Project are conservative and will not result in the over-issuance of credits, as demonstrated by comparing the values to the results of an academic study that was conducted to monitor electricity consumption in a middle income household in Gauteng, South Africa. This peer reviewed study was published in the Elsevier Journal in 2022<sup>19</sup>. The

<sup>19</sup> Masebinu, R and Kambule, N (2022) ‘Electricity Consumption Data of a Middle-income Household in Gauteng, South Africa: Pre and Post COVID-19 Lockdown (2019-2021)’, Elsevier, 43: 1-11, doi.org/10.1016/j.dib.2022.108341

study monitored electricity consumption from all household appliances for 30 months. The average electricity consumption from the household's stove was 15.3158kWh/week. This yields an average consumption of 796kWh/ year. The study covered multiple years and accounts for variations in power demand due to varying loads.

The baseline survey results yield an average consumption per household of 463kWh/year. This is significantly lower than the consumption provided in the peer reviewed study. Wonderbags are generally distributed to lower income households thus inherently will have lower electricity consumption due to lower income. Furthermore, the lower baseline consumption for stove use is conservative, as it results in lower baseline emissions, which results in lower emission reductions.

Furthermore, in this Grouped Project, electricity consumption is calculated by multiplying the uniform electric stove rating by the usage (hours or minutes). The typical electric stove rating of 1.5kW is supported by public literature and user habit surveys discussed above. With regards to usage, government's published guidelines<sup>20</sup> on the average power use of different household appliances in the City of Cape Town provides for the average electric stove usage per household of 2 hours/day. This use of total power consumption is consistent with the requirements of Paragraph 40 of AMS-II.C.

The average usage value, as per the government's recommendation discussed above, is consistent with the baseline survey results. As per the table above, the baseline survey in the Grouped Project indicates the average use of electric stoves of 26.19 minutes/day/adult. The baseline survey further indicated an average household size of 5 individuals relying on electricity for cooking. Accordingly, applying the baseline survey usage 26.19 minutes/day/adult, the total usage time per household of 5 individuals would amount to about 02h10 hours (5 individuals x 26.19 minutes/day/adult), which correlates well with the figure reported in the government guidelines of 2 hours. In addition, the baseline survey results providing person/household is on par with national statistics, which indicate that about a quarter (25%) of households in South Africa in 2023 had four to five members<sup>21</sup>.

Accordingly, the government recommendations recognise the energy savings and efficiencies that may be achieved using energy efficient cooking devices like the Wonderbag. A government publication in 2020 provides guidance on how to reduce electricity and related carbon emissions. The 2020 publication states that *"LOW-COST TIPS: Invest in a Hot Box or Wonderbag, which can cut your cooking costs by up to 60%. These boxes and bags insulate your cooking pot so that it retains the initial heat. Foods such as rice, porridge, soups or stews*

<sup>20</sup> Available at:

[https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/Smart\\_Living\\_Audit\\_Guide\\_for\\_Your\\_Home.pdf](https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/Smart_Living_Audit_Guide_for_Your_Home.pdf)

<sup>21</sup> Available at: <https://www.statssa.gov.za/?p=17283>

*can be brought to the boil on the stove, and then be transferred to the box or bag to continue the cooking process.”<sup>22</sup>*

### **PERIODIC USER HABIT SURVEYS AND KPTs**

The user habit surveys are periodic surveys undertaken to establish the ongoing monitored parameters.

The number of bags in field makes it impractical and economically unfeasible to monitor every bag in use. Field surveys, based on random samples of the bags in the field, are therefore used to statistically quantify the number of carbon credits generated by the total population (bags in use). Field researchers visit and/or interview the Wonderbag users identified in the random sample-target population during the respective surveys.

The data sets collected in the surveys by field researchers are also captured, collated and stored in the electronic database. Data sets are inputted by field researchers directly into an application on an electronic device, such as a smartphone or tablet. The field researchers may also use manual recording methods where the required electronic devices are not available at the time of the survey interviews. In such cases the manual data sets are subsequently uploaded into the electronic database at a later stage.

The User Habit Survey for the fourth monitoring period was initiated on 21 July 2025 and completed on 09 September 2025. The survey included 1,752 interviews. These surveys include a Kitchen Performance Test to establish the fuel consumption when the Wonderbag is used in the project scenario. All surveys were conducted with physical visits to the households, with each household receiving a total of 3 visits.

The sample households were selected using a systematic random approach. The selected households were taken from the database population by selecting entries randomly and exporting their distribution information.

It was necessary to contact households to find out where they and their bags currently were. This is because many people have recently moved back to their hometowns and villages, or elsewhere. This is due to the current socio and economic impacts in South Africa, still recovering from the Covid pandemic, which have disproportionately affected poorer communities, such as those in which the Wonderbags are distributed in.

The Kitchen Performance Test guidelines were used as a starting point to determine the sample size. The Kitchen Performance Test guidelines require a sample of 100 households for groups larger than 1,000. The calculated sample size according to the CDM Sampling Standard was 97 households. Oversampling was employed in order to be conservative and ensure the requirements of the CDM Sampling Standard were met in terms of statistical precision. A total

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<sup>22</sup> Available at:  
[https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/CCT\\_Smart\\_Living\\_Handbook.pdf](https://resource.capetown.gov.za/documentcentre/Documents/Procedures%2c%20guidelines%20and%20regulations/CCT_Smart_Living_Handbook.pdf)

of 1,752 surveys results were achieved with physical interviews being conducted three times at each household. The surveys were stratified by fuel type as follows:

- Electricity – 172 households
- Gas – 183 households
- Wood – 229 households

The arithmetic mean of all survey results was calculated along with the standard deviation and precision. A 95% confidence interval was applied in accordance with the CDM Sampling Standard for cross project activity instance sampling. These values were stratified by fuel type and are presented in the table below. The values in the table are provided per Wonderbag per adult equivalent (as defined by the KPT). The mean can be extrapolated to a consumption per Wonderbag by multiplying by the average adult equivalent of the fuel strata. The average adult equivalent is provided in the table below.

| <b>Fuel</b> | <b>Mean per Wonderbag</b> | <b>Standard deviation</b> | <b>Precision</b> | <b>Adult equivalent</b> |
|-------------|---------------------------|---------------------------|------------------|-------------------------|
| Electricity | 8.66 minutes/day/adult    | 7.74                      | 7.73%            | 3.33                    |
| Gas         | 0.04 kg/day/adult         | 0.04                      | 8.49%            | 3.90                    |
| Wood        | 1.03 kg/day/adult         | 0.57                      | 4.12%            | 4.24                    |

The data sets collected in the surveys by field researchers were captured, collated and stored in the electronic database. Data sets were inputted by field researchers directly into an application on an electronic device, such as a smartphone or tablet. The data sets were subsequently uploaded into Wonderbag's electronic database.

All the monitored data parameters outlined in section 4 above are captured and managed in the electronic database, described in the following figure.

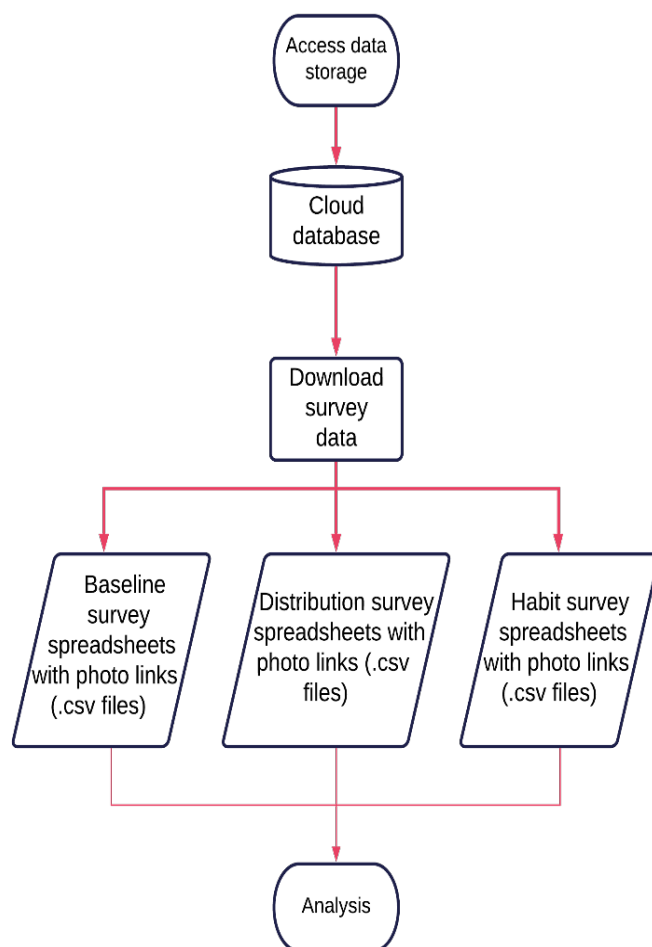


**Figure 3: Web-based data storage and management process**

The electronic database therefore provides for professional data management services, from which periodic monitoring reports to be drawn. This includes the number and dates of bags distributed per distributing entity, the number of bags distributed per project activity instance, the distribution of bags across national provinces, the quantities of fuels used for cooking purposes, types of fuel that may be used for cooking purposes, etc.

#### **Calibration procedures for monitoring equipment:**

Due to the nature of the project, none of the monitoring equipment utilised for survey purposes requires calibration. This is because the pieces of monitoring equipment used, which includes hand-held scales, foot scales and measuring jugs, are typically used in residential or household applications and therefore do not have accuracy ranges or calibration requirements associated with meters or equipment utilised in industrial applications.

#### **Organisational structure and data management responsibilities**

Wonderbag is the sole responsible party for the VCS grouped project. This includes:

- Manufacturing of Wonderbags
- Deployment of senior level staff and consultants with competencies for management of the grouped project and for effectiveness in the roles listed here
- Training, capacity-building, technical support and operational guidance to Wonderbag manufacturers and distributors
- Focal point for communications with the VVB, the VCS-registry operator and the VCS
- Oversight of record-keeping by manufacturers and quality control of all programme documentation and records, such as the Wonderbag database
- Oversight and accountability for the commissioning of monitoring surveys. Wonderbag is responsible for ensuring that the in-house personnel or third parties undertaking monitoring activities have the required competencies
- Reports summarizing user records together with results of monitoring surveys for submission to verifying VVB
- Continuous improvement of VCS grouped project management system
- On-going support to users to ensure proper use of Wonderbags
- Registration of representative pool of Wonderbag users
- Facilitation of tracking and quality assurance, data authentication, elimination of double-counting risks, investigation by VVBs and other auditors

The organisational structure of Wonderbag, including the responsibilities for the VCS grouped project, is depicted in the figure below.

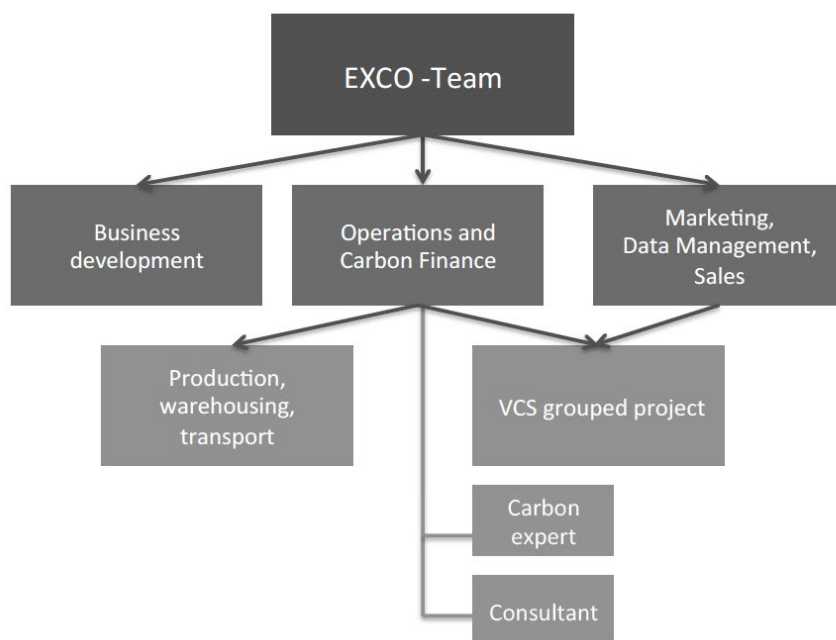


**Figure 4 Organisational Chart - Wonderbag**

#### Internal auditing and QA/QC

Wonderbag undertakes internal quality checking processes during the manufacturing of the bags. The internal QA/QC procedures include the checking of completed bags. The checks include the removal of chalk dust and threads on the fabric, as well as checks on the quality of the stitching. Bags that do not pass the internal QA/QC process are returned to the production line for the required amendments.

The bags are only vacuum packed for distribution once they have successfully passed the internal QA/QC procedure.

Wonderbag also undertakes periodic training to ensure that quality control is maintained. The training covers monitoring requirements, such as app usage, and QA/QC procedures related to data collection and management.

Wonderbag has implemented a procedure to address the issue of Wonderbags being exchanged with other end-users. This procedure makes use of both the Wonder Woman initiative and the periodic User Habit Surveys to check the serial numbers and which names they are registered to. Where the bag has been swapped with another end-user, the entries within the database are updated to reflect this change. Furthermore, at the distribution of the bags, it will be emphasised that the Wonderbag must be maintained and kept by the person it is registered to. Regular social media campaigns are conducted to sensitise end users around the maintenance, use and keeping of the Wonderbags.

## Non-conformances with the monitoring plan

The use of a central database, which generates reports related to the monitored data parameters, provides for the timeous identification of non-conformances with the monitoring plan. Data sets are regularly reviewed and assessed for completeness, consistency, accuracy and transparency. Any non-conformances are flagged and addressed as they are identified, to ensure that monitoring is undertaken as per the stipulated monitoring plan. Where necessary, field researchers may be deployed back into the field to recapture the relevant data sets.

## Sampling plan

Sampling in this monitoring period has occurred at Grouped Project level. The purpose of sampling is to obtain unbiased and reliable estimates of the mean value of parameters used in the calculations of greenhouse gas emission reductions. 'Unbiased' in this case indicates that the sampling will not systematically underestimate or overestimate the mean value determined. The sampling design is based on the following UNFCCC guidance:

- The CDM's "General guidelines for sampling and surveys for small-scale CDM project activity"; and
- The Clean Cooking Alliance's "Kitchen Performance Test" <sup>23</sup>.

The sampling plan below contains:

- A. Sampling design and method; and
- B. Data to be collected.

### A: Sampling design

#### (O) (i) Objectives and Reliability Requirements

The objective of the surveys is to establish the reduction in energy use for the cooking systems that employ the use of heat retaining Wonderbags.

Sampling is necessary to establish variables in the calculation of the reduction in energy use. Hence it results in mean annual values over the monitoring period.

The minimum desired precision of the sample group is a sampling error of 10% and a confidence level of 95%.

The Kitchen Performance Test guidelines was used as a starting point to determine the sample size. The Kitchen Performance Test guidelines requires a sample of 100 households for groups larger than 1,000.

<sup>23</sup> Bailis, B., Thompson, R., Lam, N., Berrueta, V., Muhwezi, G., and Adams, E. 2018. *Kitchen Performance Test (KPT), Version 4.0*.

This sample size was however increased for the User Habit Survey, to account for potential variance as well as non-responses. Over-sampling is allowed for in the Project Description, as per section 5.3.5. Stratification was employed by fuel type resulting in separate sample selections for each fuel.

Samples were conducted for each fuel type listed in the baseline scenario, this results in one strata for each fuel. The statistical analyses on strata sample size and results were conducted independently of each other. This ensures that results from the strata do not affect each other.

Samples were selected for each stratum, based on the information about household fuel use in the Wonderbag database. The results of the surveys were applied to all Wonderbags that use that particular fuel type.

1,752 surveys were conducted on a face-to-face basis to determine the use of electricity, wood and LPG cooking fuels in the project scenario, over a period of three days per household. In the case of electricity used for cooking purposes, the households were physically interviewed by field researchers to determine the amount of time the users spent cooking on their electric stoves, however electricity consumption was not physically measured during the surveys.

In addition, physical surveys were prioritized in the KwaZulu Natal, Western Cape and Gauteng Provinces. Wonderbag has long standing contacts within these communities and felt confident that the safety of the field researchers and respondents could be assured there.

#### *(ii) Target Population*

The target sample populations are drawn from the Wonderbag database, which consists of all registered Wonderbag users in South Africa at the time of the survey.

#### *(iii) Sampling Method*

The selection of sample-households is on a random basis. The survey methodology is a paired-sample study with no control. A paired-sample study compares household's fuel use without the use of a Wonderbag (established in the once-off baseline survey) and with the use of a Wonderbag (established in the periodic user habit surveys).

In the user habit survey, the sample was selected using a systematically random method. The selected households were taken from the current database population and phoning that person. If there was no response, then the next name in the sample was selected and contacted and so on.

#### *(iv) Sample Size*

In order to minimize non-sampling errors, such as non-responses and errors, the field team engaged in the practice of over-sampling from the population. The aim was to ensure the integrity of the sample group and maintain the randomness of participant selection.

**B: Data to be collected:***(0) (i) Field measurements*

The following monitored data parameters were collected during the user habit survey:

- a. Number, age and gender of people in the household
- b. Serial numbers (unique identifier) of distributed Wonderbags
- c. Failure rate of distributed Wonderbags
- d. Type of cooking system e.g. electric stove; other fossil fuel stove or biomass cooking system
- e. Time spent cooking on the household stove with a Wonderbag
- f. Quantity of fossil fuel or biomass consumed with a Wonderbag
- g. Number of meals cooked per week with the Wonderbag
- h. Total number of meals cooked per week

On site surveying was conducted by researchers using a prepared questionnaire, which was manually uploaded thereafter to the electronic Wonderbag database.

*(ii) Quality Assurance/Quality Control*

Wonderbag is responsible for the QA/QC for the grouped project. A third-party survey team was contracted for the execution of the User Habit Surveys and assisted by Wonderbag personnel.

The randomly selected survey sample population, specifying names, contact numbers and Wonderbag serial numbers etc., was made available to the field researchers. A predefined questionnaire provided for high-levels of data accuracy.

The physical surveys were conducted in accordance with the CDM's "General guidelines for sampling and surveys for small-scale CDM project activity" the Clean Cooking Alliance's "Kitchen Performance Test Protocol", to ensure quality data was collected and captured.

*(iii) Analysis*

The obtained data from the survey was captured and processed in the Wonderbag database. The resulting emission reductions are calculated based on the energy consumption in both the baseline and project scenarios.

**C: QA/QC procedures relating to data management and duplicate serial numbers**

The database of distributed Wonderbags is hosted in a central database to maintain version control. This database is kept up to date with new distributions as they are conducted and included within the grouped project where applicable. A monthly review will be conducted on this database to check for duplicate serial numbers. Where serial number duplicates are

identified, the users captured in the database must be contacted to establish who owns the actual bag. The erroneous entry must then be removed. A report of any duplicates identified and removed as part of this process will be communicated to Wonderbag management. In addition to this monthly review, a further check for duplicates will be conducted at future issuances to ensure no duplicate serial numbers are included in the calculation of emission reductions. Should a large distribution event occur a separate review of the distribution data covering the same process outlined above should be conducted to ensure no duplicates are recorded from the distribution activities.

## 5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

### 5.1 Baseline Emissions

The baseline emissions are determined by the electricity consumption and/or fossil fuel consumption and/or biomass consumption.

$$BE_y = BE_{ELEC,y} + BE_{FOSSIL,y}$$

Where:

$BE_y$  Baseline emissions in year  $y$  (tCO<sub>2</sub>e)

$BE_{ELEC,y}$  Baseline emissions from electricity consumption in year  $y$  (tCO<sub>2</sub>e/y)

$BE_{FOSSIL,y}$  Baseline emissions from fossil fuel combustion in year  $y$  (tCO<sub>2</sub>e/y)

The total fossil fuel baseline emissions in the Group Project are outlined in the following subsection. The baseline emissions are determined separately according to the biomass methodology, as outlined in Section 5.4 below.

#### Baseline electricity consumption

The baseline emissions from electricity-based cooking systems are calculated as follows in accordance with Option 1 – Constant load equipment in AMS-II.C (section 5.4.1.1):

$$BE_y = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$$

(Equation 1, AMS-II.C.)

An example calculation is provided for the year 2024 for RfC PA1:

This equation is modified as follows to distinguish between the use of electricity or fossil fuels in the baseline.

$$BE_{ELEC,y} = E_{BL,y} \times EF_{CO2,ELEC,y} + Q_{ref,BL} \times GWP_{ref,BL}$$

(Equation 1, AMS-II.C., modified for electricity baseline)

Where:

|                   |                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $BE_{ELEC,y}$     | Baseline emissions from electricity consumption in year $y$ (tCO <sub>2</sub> e/y)                                                                                                                                                                                                                                                                                                                   |
| $E_{BL,y}$        | Energy consumption for the baseline in year $y$ (kWh)                                                                                                                                                                                                                                                                                                                                                |
| $EF_{CO2,ELEC,y}$ | Electricity emission factor. If electricity displaced is grid, the emission factor in year $y$ shall be calculated in accordance with the provisions in ASB0040 version 01.0. If electricity displaced is captive electricity, the emission factor in year $y$ shall be calculated in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption” |

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $BE_{ELEC,y}$      | $E_{BL,ELEC,y}$ | $EF_{CO2,ELEC,y}$     |
|------|--------------------|-----------------|-----------------------|
|      | tCO <sub>2</sub> e | kWh             | tCO <sub>2</sub> /MWh |
| 2024 | 2,559              | 2,660,807       | 0.9619                |

$E_{BL}$  is calculated as follows:

$$E_{BL,y} = \sum_i (n_i \times \rho_i \times o_{i,BL} / (1 - l_y))$$

(Equation 2 AMS-II.C.)

Where:

$n_i$  Number of pieces of equipment of the group  $i$  baseline equipment retrofitted or that would have been retrofitted

$\rho_i$  Electrical power demand (kW) of the group  $i$  baseline equipment.

In the case of a retrofit activity, electrical power demand is the weighted average of the rated power (kW) of group  $i$  baseline equipment. The baseline equipment for this grouped project consists of different electrical stoves. The power ratings of these electrical stoves can be fixed ex ante.

$O_{i,BL}$  Average annual operating hours of the group of  $i$  baseline equipment.

The operating hours of the baseline equipment in year  $y$  can be determined using surveys by measurement of usage hours of baseline equipment. For a large population of baseline equipment : (a) Use a representative sample (sampling determined by a minimum 95% confidence interval and 10% maximum error margin); and (c) Ensure that sampling is statistically robust and

relevant, i.e. the selection of the equipment to be analysed for operating hours has a random distribution and is representative of target population (size, location).

$l_y$  Average annual technical grid losses (transmission and distribution) during year  $y$  for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. The reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non-technical grid loss) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable.

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $E_{BL,ELEC,y}$ | $\sum n_i * \rho_i * o_i$ | $l_y$ |
|------|-----------------|---------------------------|-------|
|      | kWh             |                           | %     |
| 2024 | 2,660,807       | 2,341,510                 | 12    |

| $\sum n_i * \rho_i * o_i$ | $n_i$ | $\rho_i * o_i$ |
|---------------------------|-------|----------------|
| 2,341,510                 | 7,793 | 300            |

The number of Wonderbags in use ( $n_i$ ) can be calculated as follows:

$$n_i = N_w \times (u_w - f_{rate,w}) \times u_{ELEC,w} \times t_w$$

Where:

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| $N_w$        | The number of Wonderbags of type $w$ distributed                                        |
| $u_w$        | Share of users actually cooking with a Wonderbag of type $w$ (%)                        |
| $u_{ELEC,w}$ | Share of users cooking on an electric stove of type $w$ (%)                             |
| $f_{rate,w}$ | Failure rate of the Wonderbags (%)                                                      |
| $t_w$        | Active time in the monitoring period for the full population of Wonderbags type $w$ (%) |

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $n_i$ | $N_w$  | $u_w$  | $UELEC_w$ | $f_{rate,w}$ | $t_w$ |
|------|-------|--------|--------|-----------|--------------|-------|
| 2024 | 7,793 | 19,933 | 91.18% | 42.9%     | 0%           | 100%  |

### Baseline fossil fuel consumption

The baseline emissions from fossil fuel consumption in cooking systems can be calculated as follows in accordance with paragraph 32 of AMS-II.C:

$$BE_{FOSSIL,y} = E_{BL,FOSSIL,i,y} \times EF_{CO2,i,y} \times n_i$$

(Paragraph 32 of AMS-II.C)

Where:

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| $BE_{FOSSIL,y}$     | Baseline emissions from fossil fuel combustion in year $y$ (tCO <sub>2</sub> e/y)                                 |
| $E_{BL,FOSSIL,i,y}$ | Baseline energy consumption of fossil fuel $i$ in year $y$ (TJ)                                                   |
| $EF_{CO2,i,y}$      | Emission factor for fossil fuel $i$ in year $y$ (tCO <sub>2</sub> /TJ)                                            |
| $n_i$               | Number of pieces of equipment of the group $i$ baseline equipment retrofitted or that would have been retrofitted |

Only emission reductions from LPG use were considered in this monitoring period.

An example calculation is provided for LPG in the year 2024 for RfC PA1:

|      | $BE_{LPG,y}$       | $EF_{CO2,LPG}$       | $NCV_{LPG}$ | $n_i$ |
|------|--------------------|----------------------|-------------|-------|
| Year | tCO <sub>2</sub> e | tCO <sub>2</sub> /TJ | TJ/tonne    |       |
| 2024 | 458                | 63.1                 | 0.00005     | 1,032 |

The number of Wonderbags in use ( $n_i$ ) can be calculated as follows:

$$n_i = N_w \times (u_w - f_{rate,w}) \times u_{FOSSIL,i,w} \times t_w$$

Where:

|                |                                                                                         |
|----------------|-----------------------------------------------------------------------------------------|
| $N_w$          | The number of Wonderbags of type $w$ distributed                                        |
| $u_w$          | Share of users actually cooking with a Wonderbag of type $w$ (%)                        |
| $u_{FOSSIL,w}$ | Share of users cooking using fossil fuel $i$ with a Wonderbag of type $w$ (%)           |
| $f_{rate,w}$   | Failure rate of the Wonderbags (%)                                                      |
| $t_w$          | Active time in the monitoring period for the full population of Wonderbags type $w$ (%) |

An example calculation is provided for LPG in the year 2024 for RfC PA1:

| Year | $n_i$ | $N_w$  | $U_w$  | $f_{rate,w}$ | $t_w$ | Share of users using stove type $j$ with a Wonderbag |
|------|-------|--------|--------|--------------|-------|------------------------------------------------------|
| 2024 | 1,032 | 19,933 | 91.18% | 0%           | 100%  | 5.68%                                                |

The baseline energy consumption can be calculated as follows:

$$E_{BL,FOSSIL,i,y} = FC_i \times NCV_{FOSSIL FUEL i}$$

Where:

$FC_i$  Baseline consumption of fossil fuel  $i$  (unit of consumption/year)

$NCV_{FOSSIL FUEL i}$  Net calorific value of fossil fuel  $i$  (TJ/unit of consumption)

An example calculation is provided for LPG in the year 2024 for RfC PA1:

| $NCV_{LPG}$ | Baseline fuel consumption using stove type $j$ |
|-------------|------------------------------------------------|
| TJ/tonne    | kg/week                                        |
| 0.00005     | 2.93                                           |

The following table summarises the parameters used in the calculation of the baseline emissions for fossil fuels. The values for the first project activity instance, RFC 1, are presented for illustration purposes. The full details, per project activity instance in this monitoring period, are contained in the provided Excel Emission Reduction Calculation spreadsheet.

#### Parameters – Example – RFC1

| Parameter                        | Unit                             | RfC1 value for 2024 |
|----------------------------------|----------------------------------|---------------------|
| $\mu_y$                          |                                  | 1                   |
| $NCV_{biomass}$                  | TJ/tonne                         | 0.0156              |
| $EF_{projected\_fossil\ fuel}$   | tCO <sub>2</sub> e/TJ            | 73.2                |
| Leakage Adjustment               |                                  | 0.95                |
| $f_{NRB,y}$                      |                                  | 0.71                |
| $LE_y$                           | tCO <sub>2</sub> e               | -                   |
| $EF_{CO2,ELEC,y}$                | tCO <sub>2</sub> /MWh            | 0.9619              |
| $Q_{ref,BL}$                     | tonnes/year                      | -                   |
| $GWP_{ref,BL}$                   | tCO <sub>2</sub> e/t refrigerant | -                   |
| $I_y$                            | %                                | 12%                 |
| $N_w$                            |                                  | 19,933              |
| $U_w$                            | %                                | 91.18%              |
| $UELEC,w$                        | %                                | 43.0%               |
| $f_{rate,w}$                     | %                                | 0.0%                |
| Percentage replacing biomass     | %                                | 51.13%              |
| Percentage replacing electricity | %                                | 42.88%              |
| Percentage replacing LPG         | %                                | 5.68%               |
| $EF_{CO2,LPG}$                   | tCO <sub>2</sub> /TJ             | 63.10               |

|                                                                         |                          |         |
|-------------------------------------------------------------------------|--------------------------|---------|
| NCV <sub>LPG</sub>                                                      | TJ/kg                    | 0.00005 |
| Average adult equivalent in households using biomass                    | adult equivalent         | 4.24    |
| Electric stove power rating                                             | kW                       | 1.5     |
| Average cooking hours in baseline per year per adult equivalent         | Hours                    | 60.15   |
| Average adult equivalent in households using electricity                | adult equivalent         | 3.33    |
| Average cooking hours in project activity per year per adult equivalent | Hours                    | 19.89   |
| LPG - Baseline fuel consumption per week                                | kg/week/adult equivalent | 0.75    |
| Average adult equivalent in households using LPG                        | adult equivalent         | 3.90    |
| LPG - Project fuel consumption per week                                 | kg/week/adult equivalent | 0.12    |
| Electricity - tw                                                        | %                        | 100%    |
| LPG - tw                                                                | %                        | 100%    |

The following tables summarise the total results of the baseline emission reduction calculations, for fossil fuels, for the project activity instances in this monitoring period. The full details, per project activity instance, are contained in the provided Excel Emission Reduction Calculation spreadsheet.

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC1 results</b> | <b>RfC2 results</b> | <b>RfC3 results</b> |
|------------------|--------------------|---------------------|---------------------|---------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 6,797               | 6,393               | 6,856               |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC4 results</b> | <b>RfC5 results</b> | <b>RfC6 results</b> |
|------------------|--------------------|---------------------|---------------------|---------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 6,985               | 11,013              | 6,395               |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC7 results</b> | <b>RfC8 results</b> | <b>RfC9 results</b> |
|------------------|--------------------|---------------------|---------------------|---------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 13,638              | 13,670              | 13,710              |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC10 results</b> | <b>RfC11 results</b> | <b>RfC12 results</b> |
|------------------|--------------------|----------------------|----------------------|----------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 13,527               | 12,555               | 13,146               |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC13 results</b> | <b>RfC14 results</b> | <b>RfC15 results</b> |
|------------------|--------------------|----------------------|----------------------|----------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 13,540               | 12,745               | 12,720               |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC16 results</b> | <b>RfC17 results</b> | <b>RfC18 results</b> |
|------------------|--------------------|----------------------|----------------------|----------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 13,799               | 13,598               | 13,906               |

| <b>AMS-II.C.</b> | <b>Unit</b>        | <b>RfC19 results</b> |
|------------------|--------------------|----------------------|
| BE <sub>y</sub>  | tCO <sub>2</sub> e | 7,094                |

The total fossil fuel baseline emissions in the monitoring period, related to methodology AMS-II.C, were 212,087 tCO<sub>2</sub>e.

### Baseline biomass consumption

The emission reductions are determined separately for the biomass methodology in the emission reduction section (Section 5.4 ). This is because the AMS.II.G. methodology does not separate the calculation between baseline and project emissions and only provides the equation for calculation the emission reductions.

## 5.2 Project Emissions

The project emissions are determined by the electricity and/or fossil fuel and/or biomass consumption during the project activity. The emission reductions are determined separately for the biomass methodology in the emission reduction section (Section 5.4 ).

$$PE_y = PE_{ELEC,y} + PE_{FOSSIL,y}$$

Where:

PE<sub>y</sub> Project emissions in year y (tCO<sub>2</sub>e)

PE<sub>ELEC,y</sub> Project emissions from electricity consumption in year y (tCO<sub>2</sub>e/y)

PE<sub>FOSSIL,y</sub> Project emissions from fossil fuel combustion in year y (tCO<sub>2</sub>e/y)

The fossil fuel project emissions per each Project Activity Instance are available in the respective emission reduction calculation spreadsheets.

### Project emissions from electricity-based cooking systems

The use of the Wonderbags for cooking purposes reduces the amount of fuel used, compared to the business as usual scenario.

The project emissions from electricity-based cooking systems are calculated as follows in accordance with AMS-II.C.:

$$PE_y = E_{PJ,y} \times EF_{CO2,y} + PE_{ref,y}$$

(Equation 7, AMS-II.C.)

Where:

PE<sub>y</sub> Project emissions in year y (tCO<sub>2</sub>e)

E<sub>PJ,y</sub> Energy consumption for the project activity in year y (kWh)

EF<sub>CO2,y</sub> Electricity emission factor. If electricity displaced is grid, the emission factor in year y shall be calculated in accordance with the provisions in VT0011. If

electricity displaced is captive electricity, the emission factor in year  $y$  shall be calculated in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption”

$PE_{ref,y}$  Project emissions from physical leakage of physical refrigerant from the project equipment in year  $y$  (tCO<sub>2</sub>e/y)

This equation is modified for this Grouped Project as follows:

$$PE_{ELEC,y} = E_{PJ,y} \times EF_{CO2,ELEC,y}$$

(Equation 7, AMS-II.C., modified for electricity consumption)

Where:

$E_{PJ,y}$  Energy consumption for the project activity in year  $y$  (kWh)

$EF_{CO2,ELEC,y}$  Electricity emission factor. If electricity displaced is grid, the emission factor in year  $y$  shall be calculated in accordance with the provisions in VT0011. If electricity displaced is captive electricity, the emission factor in year  $y$  shall be calculated in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption”

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $PE_{ELEC,y}$      | $E_{PJ,ELEC,y}$ | $EF_{CO2,ELEC,y}$     |
|------|--------------------|-----------------|-----------------------|
|      | tCO <sub>2</sub> e | kWh             | tCO <sub>2</sub> /MWh |
| 2024 | 846.30             | 879,823.81      | 0.9619                |

$E_{PJ,y}$  is calculated as follows:

$$E_{PJ,y} = \sum_t \sum_i (n_i \times \rho_i \times o_i / (1 - l_y))$$

(Equation 8 AMS-II.C.)

Where:

$n_i$  Number of pieces of equipment of the group  $i$  baseline equipment retrofitted or that would have been retrofitted.

$\rho_i$  Electrical power demand (kW) of the group  $i$  project devices measured during the time interval  $t$  in year  $y$ .

$O_i$  Operating hours of group of  $i$  project devices in the time interval  $t$  in year  $y$

Note that  $p_i$  and  $O_i$  may be determined separately or in combination, i.e. as energy consumption.

$l_y$  Average annual technical grid losses (transmission and distribution) during year  $y$  for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g. theft). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. The reliability of the data used (e.g. appropriateness, accuracy/uncertainty, especially exclusion of non-technical grid loss) shall be established and documented by the project participant. A default value of 0.1 shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable.

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $E_{PJ,ELEC,y}$ | $\sum n_i * p_i * o_i$ | $l_y$ |
|------|-----------------|------------------------|-------|
|      | kWh             |                        | %     |
| 2024 | 879,823.81      | 774,245                | 12.0% |

| $\sum n_i * p_i * o_i$ | $n_i$ | $p_i * o_i$ |
|------------------------|-------|-------------|
| 774,245                | 7,793 | 99.35       |

| $p_i * o_i$ | Power rating of stove | Average number of operating hours |
|-------------|-----------------------|-----------------------------------|
| 99.35       | 1.5                   | 66.23                             |

The number of Wonderbags in use ( $n_i$ ) can be calculated as follows:

$$n_i = N_w \times (u_w - f_{rate,w}) \times u_{ELEC,w} \times t_w$$

Where:

|              |                                                                                         |
|--------------|-----------------------------------------------------------------------------------------|
| $N_w$        | The number of Wonderbags of type $w$ distributed                                        |
| $u_w$        | Share of users cooking with a Wonderbag of type $w$ (%)                                 |
| $u_{ELEC,w}$ | Share of users cooking on an electric stove with a Wonderbag of type $w$ (%)            |
| $f_{rate,w}$ | Failure rate of the Wonderbags (%)                                                      |
| $t_w$        | Active time in the monitoring period for the full population of Wonderbags type $w$ (%) |

An example calculation is provided for the year 2024 for RfC PA1:

| Year | $n_i$ | $N_w$  | $U_w$  | $U_{ELEC,w}$ | $f_{rate,w}$ | $t_w$ |
|------|-------|--------|--------|--------------|--------------|-------|
| 2024 | 7,793 | 19,933 | 91.18% | 42.9%        | 0%           | 100%  |

### Project emissions from fossil-fuel-based cooking systems

The use of the Wonderbags for cooking purposes reduces the amount of fuel used, compared to the business as usual scenario.

The project emissions from fossil fuel consumption in cooking systems can be calculated as follows in accordance with AMS-II.C.:

$$PE_y = E_{PJ,y} \times EF_{CO2,y} + PE_{ref,y}$$

(Equation 7, AMS-II.C.)

Where:

|              |                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $PE_y$       | Project emissions in year $y$ (tCO <sub>2</sub> e)                                                                                                                                                                                                                                                                                                                                                   |
| $E_{PJ,y}$   | Energy consumption for the project activity in year $y$ (kWh)                                                                                                                                                                                                                                                                                                                                        |
| $EF_{CO2,y}$ | Electricity emission factor. If electricity displaced is grid, the emission factor in year $y$ shall be calculated in accordance with the provisions in ASB0040 version 01.0. If electricity displaced is captive electricity, the emission factor in year $y$ shall be calculated in accordance with the “Tool to calculate baseline, project and/or leakage emission from electricity consumption” |
| $PE_{ref,y}$ | Project emissions from physical leakage of physical refrigerant from the project equipment in year $y$ (tCO <sub>2</sub> e/y)                                                                                                                                                                                                                                                                        |

The equation above is modified for fossil fuel consumption as follows:

$$PE_{FOSSIL,y} = E_{PJ,FOSSIL,i,y} \times EF_{CO2,i,y} \times n_i$$

(Equation 7, AMS-II.C., modified for fossil fuel consumption)

Where:

|                     |                                                                                                                   |
|---------------------|-------------------------------------------------------------------------------------------------------------------|
| $E_{PJ,FOSSIL,i,y}$ | Project activity energy consumption of fossil fuel $i$ in year $y$ (TJ)                                           |
| $EF_{CO2,i,y}$      | Emission factor for fossil fuel $i$ in year $y$ (tCO <sub>2</sub> /TJ)                                            |
| $n_i$               | Number of pieces of equipment of the group $i$ baseline equipment retrofitted or that would have been retrofitted |

Only emission reductions from LPG have been considered in this monitoring period.

An example calculation is provided for LPG in the year 2024 for RfC PA1:

|      | PE <sub>LPG,y</sub> | EF <sub>CO2,LPG</sub> | NCV <sub>LPG</sub> | n <sub>i</sub> |
|------|---------------------|-----------------------|--------------------|----------------|
| Year | tCO <sub>2</sub> e  | tCO <sub>2</sub> /TJ  | TJ/tonne           |                |
| 2024 | 73                  | 63.1                  | 0.00005            | 1,032          |

The number of Wonderbags in use (n<sub>i</sub>) can be calculated as follows:

$$n_i = N_w \times (u_w - f_{rate,w}) \times u_{FOSSIL,i,w} \times t_w$$

Where:

|                         |                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------|
| N <sub>w</sub>          | The number of Wonderbags of type w distributed                                        |
| u <sub>w</sub>          | Share of users actually cooking with a Wonderbag of type w (%)                        |
| u <sub>FOSSIL,i,w</sub> | Share of users cooking using fossil fuel i with a Wonderbag of type w(%)              |
| f <sub>rate,w</sub>     | Failure rate of the Wonderbags (%)                                                    |
| t <sub>w</sub>          | Active time in the monitoring period for the full population of Wonderbags type w (%) |

An example calculation is provided for LPG in the year 2024 for RfC PA1:

|      | n <sub>i</sub> | N <sub>w</sub> | u <sub>w</sub> | f <sub>rate,w</sub> | t <sub>w</sub> | Share of users using stove type j with a Wonderbag |
|------|----------------|----------------|----------------|---------------------|----------------|----------------------------------------------------|
| 2024 | 1,032          | 19,934         | 91.18%         | 0%                  | 100%           | 5.7%                                               |

The project activity energy consumption can be calculated as follows:

$$E_{PJ,FOSSIL,i,y} = FC_{PJ,i} \times NCV_{FOSSIL FUEL i}$$

Where:

|                              |                                                                          |
|------------------------------|--------------------------------------------------------------------------|
| FC <sub>PJ,i</sub>           | Project activity consumption of fossil fuel i (unit of consumption/year) |
| NCV <sub>FOSSIL FUEL i</sub> | Net calorific value of fossil fuel i (TJ/unit of consumption)            |

An example calculation is provided for LPG in the year 2024 for RfC PA1:

| NCV <sub>LPG</sub> | Project fuel consumption using stove type j |
|--------------------|---------------------------------------------|
| TJ/tonne           | tonne/week                                  |
| 0.00005            | 0.02                                        |

The following tables summarise the parameters used in the calculation of the project emissions for fossil fuels. The values for the first project activity instance, RFC 1 are presented for illustration purposes. The full details, per project activity instance in this monitoring period, are contained in the provided Excel Emission Reduction Calculation spreadsheet.

### Project Emissions Parameters – Example – RFC PA1

| Parameter                                                 | Unit                  | RfC PA1 value for 2024 |
|-----------------------------------------------------------|-----------------------|------------------------|
| EF <sub>CO2,paraffin</sub>                                | tCO <sub>2</sub> /TJ  | 71.90                  |
| EF <sub>CO2,LPG</sub>                                     | tCO <sub>2</sub> /TJ  | 63.10                  |
| EF <sub>CO2,coal</sub>                                    | tCO <sub>2</sub> /TJ  | 96.10                  |
| NCV <sub>paraffin</sub>                                   | TJ/litre              | 0.00004                |
| NCV <sub>LPG</sub>                                        | TJ/kg                 | 0.00005                |
| NCV <sub>coal</sub>                                       | TJ/tonne              | 0.02                   |
| n <sub>i</sub>                                            | Household using LPG   | 1,032                  |
| N <sub>w</sub>                                            |                       | 19,933                 |
| U <sub>w</sub>                                            |                       | 91.18%                 |
| f <sub>rate,w</sub>                                       |                       | 0.0%                   |
| t <sub>w</sub>                                            | %                     | 100%                   |
| Share of users using stove type <i>j</i> with a Wonderbag | %                     | 5.7%                   |
| PE <sub>y</sub>                                           | tCO <sub>2</sub> e    | 919.63                 |
| PE <sub>ELEC,y</sub>                                      | tCO <sub>2</sub> e    | 846.30                 |
| PE <sub>FOSSIL,y</sub>                                    | tCO <sub>2</sub> e    | 73.32                  |
| E <sub>PJ,ELEC,y</sub>                                    | kWh                   | 879 823.81             |
| EF <sub>CO2,ELEC,y</sub>                                  | tCO <sub>2</sub> /MWh | 0.9619                 |
| $\sum n_i * \rho_i * o_i$                                 |                       | 774,245                |
| l <sub>y</sub>                                            | %                     | 12.0%                  |
| $\rho_i * o_i$                                            |                       | 99.35                  |
| Power rating of stove                                     | kW                    | 1.5                    |
| Average number of operating hours                         | hours                 | 66.23                  |
| PE <sub>LPG,y</sub>                                       |                       | 74                     |
| Project fuel consumption using stove type <i>j</i>        | kg/week               | 0.47                   |
| Project energy consumption-- LPG                          | TJ/week               | 0.02                   |

The following tables summarises the total results of the project emission calculations, for fossil fuels, for the project activity instances in this monitoring period.

| AMS-II.C.       | Unit               | RfC1 results | RfC2 results | RfC3 results |
|-----------------|--------------------|--------------|--------------|--------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 2,071        | 1,984        | 2,084        |

| AMS-II.C.       | Unit               | RfC4 results | RfC5 results | RfC6 results |
|-----------------|--------------------|--------------|--------------|--------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 2,149        | 3,357        | 1,963        |

| AMS-II.C.       | Unit               | RfC7 results | RfC8 results | RfC9 results |
|-----------------|--------------------|--------------|--------------|--------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 4,215        | 4,199        | 4,195        |

| AMS-II.C. | Unit | RfC10 results | RfC11 results | RfC12 results |
|-----------|------|---------------|---------------|---------------|
|-----------|------|---------------|---------------|---------------|

|                 |                    |       |       |       |
|-----------------|--------------------|-------|-------|-------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 3,935 | 3,446 | 3,655 |
|-----------------|--------------------|-------|-------|-------|

| AMS-II.C.       | Unit               | RfC13 results | RfC14 results | RfC15 results |
|-----------------|--------------------|---------------|---------------|---------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 3,842         | 3,613         | 3,463         |

| AMS-II.C.       | Unit               | RfC16 results | RfC17 results | RfC18 results |
|-----------------|--------------------|---------------|---------------|---------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 3,901         | 4,126         | 4,220         |

| AMS-II.C.       | Unit               | RfC19 results |
|-----------------|--------------------|---------------|
| PE <sub>y</sub> | tCO <sub>2</sub> e | 2,076         |

The total fossil fuel project emissions in the monitoring period, related to methodology AMS-II.C, were 62,496 tCO<sub>2</sub>e.

### Project emissions from biomass-based cooking systems

The use of the Wonderbags for cooking purposes reduces the amount of fuel used, compared to the business as usual scenario. The emission reductions are determined separately for the biomass methodology in the emission reduction section (Section 5.4). The AMS-II.G. methodology does not separate the calculation between baseline and project emissions and only provides the equation for calculation the emission reductions.

## 5.3 Leakage Emissions

Leakage is considered only under AMS-II.G, i.e. not under AMS-II.C. Leakage has therefore been taken into account in the calculation of emission reductions from reducing consumption of non-renewable biomass.

Leakage related to non-renewable biomass use is considered by multiplying the parameter  $B_{y,savings,i,j}$  by a factor 0.95 in accordance with paragraph 39 of AMS-II.G. AMS-II.G does not provide procedures to separately calculate leakage emissions in this section of the monitoring report. As such the discount factor of 0.95 is applied directly in the calculation of emission reductions and not as a separate term.

## 5.4 GHG Emission Reductions and Carbon Dioxide Removals

The Grouped Project emission reductions in this monitoring period arise from both of the eligible methodologies:

- AMS-II.C. “Demand-side energy efficiency activities for specific technologies”.

- AMS-II.G. “Energy efficiency measures in thermal applications of non-renewable biomass”.

The total value of emission reductions is therefore the sum of the emission reductions, calculated in accordance with each methodology.

$$ER_y = ER_{AMS-II.C.,y} + ER_{AMS-II.G.,y}$$

Where:

$ER_y$  Total emission reductions of the project in year  $y$  (tCO<sub>2</sub>e)

$ER_{AMS-II.C.,y}$  Emission reductions calculated using the equations in AMS-II.C. in year  $y$  (tCO<sub>2</sub>e)

$ER_{AMS-II.G.,y}$  Emission reductions calculated using the equations in AMS-II.G. in year  $y$  (tCO<sub>2</sub>e)

Based on the formula above, the total emission reductions for the Grouped Project in this monitoring report, comprising RfC PA 1 – RfC PA 19, are summarised in the following table:

#### Total Emissions Reductions for RfC PA 1 – RfC PA 19

| Grouped Project: RfC PA 1 – RfC PA 19 | Total Emission Reductions (tCO <sub>2</sub> e) |
|---------------------------------------|------------------------------------------------|
| <b>Total</b>                          | <b>434,924</b>                                 |
| Annual Average                        | 192,889                                        |

The summarised emission reductions for the Grouped Project, comprising RfC PA 1 – RfC PA 19, broken down per AMS-II.C. and AMS-II.G., follow.

| Grouped Project: RfC PA 1 – RfC PA 19 | Reductions under AMS-II.C. (tCO <sub>2</sub> e) | Reductions under AMS-II.G. (tCO <sub>2</sub> e) |
|---------------------------------------|-------------------------------------------------|-------------------------------------------------|
| <b>Total</b>                          | <b>149,591</b>                                  | <b>285,334</b>                                  |
| Annual Average                        | 66,344                                          | 126,545                                         |

The details of the emission reduction calculations, per respective methodology, are provided in the following subsections.

#### Electricity and fossil fuel emission reductions as per AMS-II.C ( $ER_{AMS-II.C.,y}$ )

AMS-II.C. specifies the calculation of emission reductions as follows:

$$ER_y = (BE_y - PE_y) - LE_y$$

(Equation 10, AMS-II.C.)

| Vintage period             | Baseline emissions (tCO <sub>2</sub> e) | Project emissions (tCO <sub>2</sub> e) | Leakage emissions (tCO <sub>2</sub> e) | Reduction VCU (tCO <sub>2</sub> e) | Removal VCU (tCO <sub>2</sub> e) | Total VCUs (tCO <sub>2</sub> e) |
|----------------------------|-----------------------------------------|----------------------------------------|----------------------------------------|------------------------------------|----------------------------------|---------------------------------|
| 01-May-2023 to 31-Dec-2023 | 63,090                                  | 18,586                                 | 0                                      | 44,504                             | N/A                              | 44,504                          |
| 01-Jan-2024 to 31-Dec-2024 | 94,160                                  | 27,746                                 | 0                                      | 66,414                             | N/A                              | 66,414                          |
| 01-Jan-2025 to 31-Jul-2025 | 54,838                                  | 16,164                                 | 0                                      | 38,674                             | N/A                              | 38,674                          |
| <b>Total</b>               | <b>212,087</b>                          | <b>62,496</b>                          | <b>0</b>                               | <b>149,591</b>                     | <b>N/A</b>                       | <b>149,591</b>                  |

### Biomass emission reductions as per AMS-II.G (ER<sub>AMS-II.G.,y</sub>)

The biomass emission reductions were calculated as follows:

$$ER_{y,i,j} = B_{y,savings,i,j} \times 0.95 \times N_{y,i,j} \times \mu_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\_fossil\_fuel}$$

(Equation 2, AMS-II.G.)

Where:

|                            |                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ER <sub>y,i,j</sub>        | Emission reductions by project device type <i>i</i> and batch <i>j</i> during year <i>y</i> in tCO <sub>2</sub> e                                                                    |
| B <sub>y,savings,i,j</sub> | Quantity of woody biomass that is saved in tonnes per cookstove device type <i>i</i> and batch <i>j</i> during year <i>y</i>                                                         |
| N <sub>y,i,j</sub>         | Number of project devices of type <i>i</i> and batch <i>j</i> operating during year <i>y</i>                                                                                         |
| μ <sub>y</sub>             | Adjustment to account for any continued use of pre-project devices during the year <i>y</i> when applying equations 7 and 8 (fraction). Use 1.0 in other cases.                      |
| f <sub>NRB,y</sub>         | Fraction of woody biomass that can be established as non-renewable biomass                                                                                                           |
| NCV <sub>biomass</sub>     | Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne, based on the gross weight of the wood that is 'air-dried'). |

EF<sub>projected\_fossil\_fuel</sub> Emission factor for the fossil fuels projected to be used for substitution of non-renewable woody biomass by similar consumers

An example calculation is provided for the year 2024 for RfC PA1:

| Year | ER <sub>y,i,j</sub> | B <sub>y,savings,i,j</sub> |      | N <sub>y,i,j</sub> | μ <sub>y</sub> | f <sub>NRB,y</sub> | NCV <sub>biomass</sub> | EF <sub>projected_fossil_fuel</sub> |
|------|---------------------|----------------------------|------|--------------------|----------------|--------------------|------------------------|-------------------------------------|
|      | tCO <sub>2</sub> e  | tonnes                     |      | Number of devices  |                |                    | TJ/tonne               | tCO <sub>2</sub> e/TJ               |
| 2024 | 22,694              | 2.89                       | 0.95 | 10 192             | 1.00           | 0.71               | 0.0156                 | 73.2                                |

The quantity of woody biomass that is saved due to the project activity is calculated as follows in accordance with option 2 of the AMS-II.G. methodology:

$$B_{y,savings,i,j} = B_{old,i,j} - B_{new,KPT,i,j}$$

(Equation 6, AMS-II.G.)

Where:

**B<sub>old,i,j</sub>** Annual quantity of woody biomass that would have been used in the absence of the project activity to generate useful thermal energy equivalent to that provided by the project device type *i* and batch *j*

**B<sub>new,KPT,i,j</sub>** Annual quantity of woody biomass used in tonnes per project device of type *i* and batch *j*, measured as per the Kitchen Performance Test (KPT) protocol. The KPT shall be carried out in accordance with national standards (if available) or international standards or guidelines. (e.g. the KPT Protocol listed by Clean Cooking Alliance)

An example calculation is provided for the year 2024 for RfC PA1:

| Year | B <sub>y,savings,i,j</sub> | B <sub>old,i,j</sub> | B <sub>new,KPT,i,j</sub> |
|------|----------------------------|----------------------|--------------------------|
|      | tonnes                     | tonnes               | tonnes                   |
| 2024 | 2.89                       | 4.89                 | 1.998                    |

The following table summarises the parameters used in the calculation of the emission reductions for biomass. The values for the first project activity instance, RfC 1 are presented for illustration purposes. The full details, per project activity instance in this monitoring period, are contained in the provided Excel Emission Reduction Calculation spreadsheet.

| AMS-II.G.                           | Unit                  | RfC1 value for 2024 |
|-------------------------------------|-----------------------|---------------------|
| B <sub>y,savings,i,j</sub>          | Tonnes                | 2.89                |
| N <sub>y,i,j</sub>                  | Number of devices     | 10,192              |
| μ <sub>y</sub>                      |                       | 1                   |
| f <sub>NRB,y</sub>                  |                       | 0.71                |
| NCV <sub>biomass</sub>              | TJ/tonne              | 0.0156              |
| EF <sub>projected_fossil fuel</sub> | tCO <sub>2</sub> e/TJ | 73.2                |
| B <sub>old,i,j</sub>                | tonnes                | 4.89                |
| B <sub>new,KPT,i,j</sub>            | tonnes                | 1.998               |

The following tables summarise the total results of the emission reduction calculations, for biomass, for the project activity instances in this monitoring period. The full details, per project activity instance, are contained in the provided Excel Emission Reduction Calculation spreadsheet.

| AMS-II.G.           | Unit               | RfC1 results | RfC2 results | RfC3 results |
|---------------------|--------------------|--------------|--------------|--------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 51,107       | 53,455       | 51,101       |

| AMS-II.G.           | Unit               | RfC4 results | RfC5 results | RfC6 results |
|---------------------|--------------------|--------------|--------------|--------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 49,108       | 15,538       | 53,425       |

| <b>AMS-II.G.</b>    | <b>Unit</b>        | <b>RfC7 results</b> | <b>RfC8 results</b> | <b>RfC9 results</b> |
|---------------------|--------------------|---------------------|---------------------|---------------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 903                 | 853                 | 974                 |

| <b>AMS-II.G.</b>    | <b>Unit</b>        | <b>RfC10 results</b> | <b>RfC11 results</b> | <b>RfC12 results</b> |
|---------------------|--------------------|----------------------|----------------------|----------------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 5,093                | 231                  | 366                  |

| <b>AMS-II.G.</b>    | <b>Unit</b>        | <b>RfC13 results</b> | <b>RfC14 results</b> | <b>RfC15 results</b> |
|---------------------|--------------------|----------------------|----------------------|----------------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 115                  | 110                  | 125                  |

| <b>AMS-II.G.</b>    | <b>Unit</b>        | <b>RfC16 results</b> | <b>RfC17 results</b> | <b>RfC18 results</b> |
|---------------------|--------------------|----------------------|----------------------|----------------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 95                   | 221                  | 727                  |

| <b>AMS-II.G.</b>    | <b>Unit</b>        | <b>RfC19 results</b> |
|---------------------|--------------------|----------------------|
| ER <sub>y,i,j</sub> | tCO <sub>2</sub> e | 1,785                |

The total emission reductions per year follow. Note that the AMS.II.G. methodology does not separate the calculation between baseline and project emissions and hence only the calculation results for the emission reductions are provided in the following table.

| <b>Vintage period</b>               | <b>Baseline emissions (tCO<sub>2</sub>e)</b> | <b>Project emissions (tCO<sub>2</sub>e)</b> | <b>Leakage emissions (tCO<sub>2</sub>e)</b> | <b>Reduction VCU (tCO<sub>2</sub>e)</b> | <b>Removal VCU (tCO<sub>2</sub>e)</b> | <b>Total VCUs (tCO<sub>2</sub>e)</b> |
|-------------------------------------|----------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------|---------------------------------------|--------------------------------------|
| 01-May-2023 to 31-December-2023     | N/A                                          | N/A                                         | N/A                                         | 85,045                                  | N/A                                   | 85,045                               |
| 01-January-2024 to 31-December-2024 | N/A                                          | N/A                                         | N/A                                         | 126,699                                 | N/A                                   | 126,699                              |
| 01-January-2025 to 31-July-2025     | N/A                                          | N/A                                         | N/A                                         | 73,590                                  | N/A                                   | 73,590                               |
| <b>Total</b>                        | N/A                                          | N/A                                         | N/A                                         | 285,334                                 | N/A                                   | 285,334                              |

The total emission reductions across both methodologies are as follows:

| <b>Vintage period</b>           | <b>Baseline emissions (tCO<sub>2</sub>e)</b> | <b>Project emissions (tCO<sub>2</sub>e)</b> | <b>Leakage emissions (tCO<sub>2</sub>e)</b> | <b>Reduction VCU (tCO<sub>2</sub>e)</b> | <b>Removal VCU (tCO<sub>2</sub>e)</b> | <b>Total VCUs (tCO<sub>2</sub>e)</b> |
|---------------------------------|----------------------------------------------|---------------------------------------------|---------------------------------------------|-----------------------------------------|---------------------------------------|--------------------------------------|
| 01-May-2023 to 31-December-2023 | N/A                                          | N/A                                         | N/A                                         | 129,548                                 | N/A                                   | 129,548                              |
| 01-January-2024 to 31-          | N/A                                          | N/A                                         | N/A                                         | 193,113                                 | N/A                                   | 193,113                              |

|                                 |            |            |            |                |            |                |
|---------------------------------|------------|------------|------------|----------------|------------|----------------|
| December-2024                   |            |            |            |                |            |                |
| 01-January-2025 to 31-July-2025 | N/A        | N/A        | N/A        | 112,263        | N/A        | 112,263        |
| <b>Total</b>                    | <b>N/A</b> | <b>N/A</b> | <b>N/A</b> | <b>434,924</b> | <b>N/A</b> | <b>434,924</b> |

Duplicates were identified in the database of serial numbers. These serial numbers have been removed from the database and the potential overestimation of VCUs calculated. The overestimation for MP 1 and MP 2 has been conservatively estimated by applying the maximum emission reductions of 0.55 tCO<sub>2</sub>e/Wonderbag/year to the duplicates removed and the period. The MP 3 overestimation has been recalculated by revising the emission reduction calculation spreadsheet with the revised database of bags without duplicates. The total over issued credits, arising over MP 1, MP 2 and MP 3, amounts to 31,622 tCO<sub>2</sub>e. This overestimation has been subtracted from the emission reductions in this fourth monitoring period. The summary of the overestimations for each period is provided in the table below.

| <b>Period</b> | <b>Actual VCUs</b>         | <b>Over-issued VCUs</b>        |
|---------------|----------------------------|--------------------------------|
| MP 1          | 126,587 tCO <sub>2</sub> e | 16,217 tCO <sub>2</sub> e      |
| MP 2          | 180,076 tCO <sub>2</sub> e | 8,564 tCO <sub>2</sub> e       |
| MP 3          | 183,434 tCO <sub>2</sub> e | 6,841 tCO <sub>2</sub> e       |
| MP 4          | 434,924 tCO <sub>2</sub> e | N/A                            |
| <b>Total</b>  |                            | <b>31,622 tCO<sub>2</sub>e</b> |

The final amount of issuance for the fourth monitoring period is therefore 403,302 tCO<sub>2</sub>e (i.e. 434,924 tCO<sub>2</sub>e - 31,622 tCO<sub>2</sub>e). The over-issuance will be deducted from the 2025 vintage. The VCUs to be issued for this fourth monitoring period are therefore as follows by vintage.

| <b>Vintage</b> | <b>Actual VCUs</b>              |
|----------------|---------------------------------|
| 2023           | 129,548 tCO <sub>2</sub> e      |
| 2024           | 193,113 tCO <sub>2</sub> e      |
| 2025           | 80,641 tCO <sub>2</sub> e       |
| <b>Total</b>   | <b>403,302 tCO<sub>2</sub>e</b> |

### Comparison against ex ante emission reductions

The achieved emission reductions (total of the emission reductions achieved under both methodologies) for the full monitoring period of 2025 years are compared with the total ex ante emission reduction estimates for the same period. The achieved emission reductions for the included projects activity instances (PAIs) are lower than the ex ante emission reductions and hence no further justifications are required.

| Vintage period                      | Ex-ante estimated reductions/removals | Achieved reductions/removals | Percent difference | Explanation for the difference                                                                                                                                                                                   |
|-------------------------------------|---------------------------------------|------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01-May-2023 to 31-December-2023     | 178,569                               | 129,548                      | -27%               | Monitored project scenario consumption is less than the estimated consumption in the ex ante calculations. The ex ante calculations also include coal and paraffin which are excluded in this monitoring period. |
| 01-January-2024 to 31-December-2024 | 266,032                               | 193,113                      | -27%               | Monitored project scenario consumption is less than the estimated consumption in the ex ante calculations. The ex ante calculations also include coal and paraffin which are excluded in this monitoring period. |
| 01-January-2025 to 31-July-2025     | 154,517                               | 112,263                      | -27%               | Monitored project scenario consumption is less than the estimated consumption in the ex ante calculations. The ex ante calculations also include coal and paraffin which are excluded in this monitoring period. |
| Total                               | 599,119                               | 434,924                      | -27%               | Monitored project scenario consumption is less than the estimated consumption in the ex ante calculations. The ex ante calculations also include coal and paraffin which are excluded in this monitoring period. |

# APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Not Applicable

# APPENDIX 2: SUSTAINABLE DEVELOPMENT CONTRIBUTIONS

## SDG Impact 1 (SDG 1) - time saving

| Inputs                                                      | Value      | Unit                        | Source                                                            |
|-------------------------------------------------------------|------------|-----------------------------|-------------------------------------------------------------------|
| Baseline electricity time                                   | 26.19      | min/day/adult equivalent/WB | As per latest User Habit Survey for the fourth monitoring period. |
| Project electricity time                                    | 8.66       | min/day/adult equivalent/WB |                                                                   |
| Average adult equivalent                                    | 3.33       | adults                      |                                                                   |
| Times cooked per week                                       | 2.65       | times/week                  |                                                                   |
| Weeks in MP                                                 | 117.57     | weeks                       | Calculated                                                        |
| Number of Wonderbags distributed to electricity stove users | 248,127    | Wonderbags                  | Wonderbag database                                                |
| Time saved                                                  | 75,213,612 | hours                       | Calculated based on above inputs                                  |
|                                                             | 33,357,191 | hours/year                  |                                                                   |
|                                                             | 134        | hours/year/household        |                                                                   |

The time-savings values for electricity users were surveyed and reported for the first time in the current, fourth, monitoring period.

Please refer to the tab titled 'SD impacts' in the ex post emission reduction calculations spreadsheet for further details.

## SDG Impact 2 (SDG 1) - reduced monetary spend

| Inputs            | Value       | Unit               | Source                                                                                                                                                                                             |
|-------------------|-------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electricity saved | 121,700,963 | kWh                | Emission Reduction Calculations                                                                                                                                                                    |
| LPG saved         | 13,888,561  | kg                 |                                                                                                                                                                                                    |
| Electricity price | 2.4554      | ZAR/kWh            | Eskom 2024/2025 Tariff booklet, Block 1 energy charge                                                                                                                                              |
| LPG price         | 34.0567     | ZAR/kg             | Average price for 2024 based on published prices <sup>24</sup>                                                                                                                                     |
| Money saved       | 725,800,121 | ZAR                | Calculated based on above inputs as the sum of the price multiplied by the savings. I.e. Electricity savings multiplied by the electricity price plus the LPG savings multiplied by the LPG price. |
|                   | 2,039       | ZAR/Wonderbag      |                                                                                                                                                                                                    |
|                   | 904         | ZAR/Wonderbag/year |                                                                                                                                                                                                    |

<sup>24</sup> <https://fuelsindustry.org.za/consumer-information/fuel-prices-current-past/>

Please refer to the tab titled 'SD impacts' in the ex post emission reduction calculations spreadsheet. Calculations use the average 2024 Eskom residential tariff and the average 2024 LPG price in South Africa.

#### SDG Impact 3 (SDG 1) - community donations

| Monitoring report | Value            | Unit       | Source                     |
|-------------------|------------------|------------|----------------------------|
| MRs 1-3           | 852,215          | ZAR        | As per validated MR        |
| Current MR 4      | 418,406          | ZAR        | Invoices paid by Wonderbag |
| <b>Total</b>      | <b>1,270,621</b> | <b>ZAR</b> |                            |

A total of R418,406 was donated in the fourth monitoring period. Due to POPIA constraints (South Africa's privacy law), the actual invoices cannot be shared publicly in this document.

#### SDG Impact 4 (SDG 8) - entrepreneurs created

A total of 156 entrepreneurs were supported in the monitoring period. Due to POPIA constraints (South Africa's privacy law) the list of names cannot be shared publicly in this document.

#### SDG Impact 5 (SDG 12) - foam recycled

Total of 82 tonnes of foam recycled in monitoring period. The following tables are the goods-received notes (in kg) applicable to the purchase of waste foam for use to manufacture Wonderbags.

| NATURAL BALANCE GLOBAL (PTY) LT Date Quantity KG |        |          |        |
|--------------------------------------------------|--------|----------|--------|
| Goods Rec Note                                   | LR001  | 11/10/23 | 236,6  |
| Goods Rec Note                                   | LR001  | 06/10/23 | 208    |
| Goods Rec Note                                   | FIR001 | 25/05/23 | 17480  |
| Goods Rec Note                                   | STF001 | 31/05/23 | 4112,7 |
| Goods Rec Note                                   | STF001 | 31/05/23 | 2989,5 |
| Goods Rec Note                                   | LR001  | 25/10/23 | 545,3  |
| Goods Rec Note                                   | LR001  | 30/08/23 | 246    |
| Goods Rec Note                                   | LR001  | 31/08/23 | 236,6  |
| Goods Rec Note                                   | LR001  | 31/08/23 | 288    |
| Goods Rec Note                                   | LR001  | 11/07/23 | 488,6  |
| Goods Rec Note                                   | LR001  | 13/07/23 | 560    |
| Goods Rec Note                                   | LR001  | 30/07/23 | 459    |
| Goods Rec Note                                   | LR001  | 05/09/23 | 53,8   |
| Goods Rec Note                                   | LR001  | 11/09/23 | 237    |
| Goods Rec Note                                   | LR001  | 19/09/23 | 139,2  |
| Goods Rec Note                                   | LR001  | 04/08/23 | 519    |
| Goods Rec Note                                   | LR001  | 02/08/23 | 476    |
| Goods Rec Note                                   | LR001  | 02/08/23 | 19,9   |
| Goods Rec Note                                   | LR001  | 02/08/23 | 249    |
| Goods Rec Note                                   | LR001  | 02/08/23 | 522    |
| Goods Rec Note                                   | LR001  | 23/08/23 | 282,5  |
| Goods Rec Note                                   | LR001  | 22/08/23 | 256,3  |
| Goods Rec Note                                   | LR001  | 28/08/23 | 249    |
| Goods Rec Note                                   | LR001  | 25/08/23 | 246    |
| Goods Rec Note                                   | LR001  | 01/08/23 | 522    |
| Goods Rec Note                                   | LR001  | 29/09/23 | 117,1  |
| Goods Rec Note                                   | LR001  | 14/09/23 | 117    |
| Goods Rec Note                                   | LR001  | 26/09/23 | 222,3  |
| Goods Rec Note                                   | LR001  | 26/09/23 | 119    |
| Goods Rec Note                                   | LR001  | 25/10/23 | 158,1  |
| Goods Rec Note                                   | LR001  | 25/10/23 | 133    |
| Goods Rec Note                                   | LR001  | 19/09/23 | 176    |
| Goods Rec Note                                   | LR001  | 26/09/23 | 90,1   |
| Goods Rec Note                                   | LR001  | 20/09/23 | 197,3  |
| Goods Rec Note                                   | LR001  | 04/10/23 | 112    |
| Goods Rec Note                                   | LR001  | 29/09/23 | 111    |
| Goods Rec Note                                   | FIR001 | 09/10/23 | 3560   |
| Goods Rec Note                                   | FIR001 | 20/09/23 | 3618   |
| Goods Rec Note                                   | LR001  | 09/10/23 | 109,8  |
| Goods Rec Note                                   | LR001  | 13/10/23 | 213    |
| Goods Rec Note                                   | LR001  | 18/10/23 | 68,1   |
| Goods Rec Note                                   | STRK   | 25/10/23 | 3000   |
| Goods Rec Note                                   | LR001  | 25/10/23 | 129,9  |
| Goods Rec Note                                   | LR001  | 30/09/23 | 293,4  |
| Goods Rec Note                                   | LR001  | 16/10/23 | 724,8  |
| Goods Rec Note                                   | LR001  | 30/10/23 | 155,2  |
| Goods Rec Note                                   | LR001  | 30/10/23 | 229,5  |

|                |        |          |         |
|----------------|--------|----------|---------|
| Goods Rec Note | FIR001 | 30/10/23 | 18920   |
| Goods Rec Note | LR001  | 13/11/23 | 686     |
| Goods Rec Note | STRK   | 28/11/23 | 1621,23 |
| Goods Rec Note | LR001  | 30/09/25 | 122,3   |
| Goods Rec Note | LR001  | 30/09/25 | 390,6   |
| Goods Rec Note | LR001  | 30/09/25 | 50,8    |
| Goods Rec Note | LR001  | 08/08/24 | 912,43  |
| Goods Rec Note | LR001  | 30/10/24 | 79      |
| Goods Rec Note | LR001  | 04/11/24 | 208,3   |
| Goods Rec Note | LR001  | 01/11/24 | 372     |
| Goods Rec Note | LR001  | 20/11/24 | 492     |
| Goods Rec Note | LR001  | 19/11/24 | 520     |
| Goods Rec Note | LR001  | 04/11/24 | 355,25  |
| Goods Rec Note | LR001  | 14/11/24 | 244     |
| Goods Rec Note | LR001  | 12/02/25 | 366     |
| Goods Rec Note | LR001  | 24/02/25 | 366     |
| Goods Rec Note | LR001  | 24/02/25 | 366     |
| Goods Rec Note | LR001  | 02/04/25 | 58,8    |
| Goods Rec Note | LR001  | 02/04/25 | 229,3   |
| Goods Rec Note | LR001  | 09/04/25 | 162,1   |
| Goods Rec Note | LR001  | 27/02/25 | 237,6   |
| Goods Rec Note | LR001  | 15/02/25 | 188,29  |
| Goods Rec Note | LR001  | 12/03/25 | 31      |
| Goods Rec Note | LR001  | 12/03/25 | 173     |
| Goods Rec Note | LR001  | 29/07/25 | 61      |
| Goods Rec Note | LR001  | 04/03/25 | 875,8   |
| Goods Rec Note | LR001  | 27/03/25 | 70      |
| Goods Rec Note | LR001  | 27/03/25 | 110,3   |
| Goods Rec Note | LR001  | 27/03/25 | 93,2    |
| Goods Rec Note | LR001  | 27/03/25 | 185,2   |
| Goods Rec Note | LR001  | 26/03/25 | 56      |
| Goods Rec Note | LR001  | 29/07/25 | 0,3     |
| Goods Rec Note | LR001  | 29/07/25 | 140     |
| Goods Rec Note | LR001  | 16/04/25 | 209,6   |
| Goods Rec Note | LR001  | 15/04/25 | 173,7   |
| Goods Rec Note | LR001  | 15/04/25 | 308,3   |
| Goods Rec Note | LR001  | 24/04/25 | 106,5   |
| Goods Rec Note | LR001  | 24/04/25 | 118,1   |
| Goods Rec Note | LR001  | 23/05/25 | 47,8    |
| Goods Rec Note | LR001  | 08/04/25 | 90      |
| Goods Rec Note | STRK   | 10/04/25 | 1000    |
| Goods Rec Note | LR001  | 10/04/25 | 182,4   |
| Goods Rec Note | LR001  | 10/07/25 | 50      |
| Goods Rec Note | LR001  | 09/07/25 | 89      |
| Goods Rec Note | LR001  | 04/07/25 | 68,6    |
| Goods Rec Note | STRK   | 10/07/25 | 1000    |
| Goods Rec Note | STRK   | 13/05/25 | 2,8     |
| Goods Rec Note | LR001  | 02/07/25 | 166,4   |

|                                    |       |          |                 |
|------------------------------------|-------|----------|-----------------|
| Goods Rec Note                     | LR001 | 30/05/25 | 122,6           |
| Goods Rec Note                     | LR001 | 21/05/25 | 48,2            |
| Goods Rec Note                     | LR001 | 02/05/25 | 377,9           |
| Goods Rec Note                     | LR001 | 06/05/25 | 61,2            |
| Goods Rec Note                     | LR001 | 08/05/25 | 318,8           |
| Goods Rec Note                     | LR001 | 13/05/25 | 211,8           |
| Goods Rec Note                     | LR001 | 16/05/25 | 49,6            |
| Goods Rec Note                     | STRK  | 13/05/25 | 1000            |
| Goods Rec Note                     | LR001 | 15/05/25 | 82,3            |
| Goods Rec Note                     | LR001 | 08/05/25 | 61,1            |
| Goods Rec Note                     | LR001 | 27/05/25 | 92              |
| Goods Rec Note                     | LR001 | 30/05/25 | 733,36          |
| Goods Rec Note                     | LR001 | 20/06/25 | 70              |
| Goods Rec Note                     | LR001 | 19/06/25 | 78              |
| Goods Rec Note                     | LR001 | 24/06/25 | 90              |
| Goods Rec Note                     | LR001 | 05/06/25 | 97,2            |
| Goods Rec Note                     | STRK  | 06/06/25 | 970             |
| Goods Rec Note                     | LR001 | 13/06/25 | 194,4           |
| <b>TOTAL QUANTITY FOAM USED KG</b> |       |          | <b>82292,06</b> |

### SDG Impact 6 – emission reductions

| Monitoring report | Value          | Unit         | Source                                         |
|-------------------|----------------|--------------|------------------------------------------------|
| MR1               | 110,457        | tCO2e        | As per validated MR adjusted for over issuance |
| MR2               | 171,512        | tCO2e        | As per validated MR adjusted for over issuance |
| MR3               | 176,593        | tCO2e        | As per validated MR adjusted for over issuance |
| Current MR4       | 434,924        | tCO2e        | Ex post ER calculations                        |
| <b>Total</b>      | <b>893,486</b> | <b>tCO2e</b> |                                                |

Please refer to the tab titled ‘SD impacts’ in the ex post emission reduction calculations spreadsheet for more information.

### SDG Impact 7 supporting documents

| Monitoring report | Value          | Unit          | Source                  |
|-------------------|----------------|---------------|-------------------------|
| MRs 1-3           | 84,769         | tonnes        | As per validated MR     |
| Current MR 4      | 370,906        | tonnes        | Ex post ER calculations |
| <b>Total</b>      | <b>455,675</b> | <b>tonnes</b> |                         |

Please refer to the tab titled ‘SD impacts’ in the ex post emission reduction calculations spreadsheet for more information.

# APPENDIX 3: GRID EMISSION FACTOR CALCULATION

The grid emission factor is calculated as follows;

## Step 1:

The relevant electricity system is identified as the South African National Grid including generation from IPPs and Imports from the SAPP network. This is selected in accordance with Option 2 in Tool 7, as the System Operator is a single dispatch centre and dispatches all power connected to the national grid.

## Step 2:

Off-grid power plants are not included in the project electricity system due to the lack of data available. This is in accordance with Option 1 in Tool 7.

## Step 3:

The OM was calculated using the simple OM approach using Option A from the tool and excluding off-grid plants. The data for this calculation was obtained from published Eskom data breaking down generation and consumption by power station which is available disaggregated annually<sup>25</sup>. The fuel consumption and type is available allowing for a plant emission factor to be calculated. The ex ante data vintage option was selected in accordance with VT0011. The following formulas are used in the Verra calculation.

$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (\text{CDM Tool 07, Equation 3})$$

$$EF_{EL,m,y} = \frac{\sum_i FC_{i,m,y} \times NCV_{i,y} \times EF_{CO2,i,y}}{EG_{m,y}} \quad (\text{CDM Tool 07, Equation 4})$$

Where:

$EF_{grid,OMsimple,y}$  = Simple operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$EG_{m,y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year y (MWh)

$EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year y (tCO<sub>2</sub>/MWh)

$FC_{i,m,y}$  = Amount of fuel type  $i$  consumed by power unit  $m$  in year y (Mass or volume unit)

<sup>25</sup> Data available at: <https://www.eskom.co.za/dataportal/emissions/elementor-291086/>

$NCV_{i,y}$  = Net calorific value (energy content) of fuel type  $i$  in year  $y$  (GJ/mass or volume unit)

$EF_{CO_2,i,y}$  = CO<sub>2</sub> emission factor of fuel type  $i$  in year  $y$  (tCO<sub>2</sub>/GJ)

The operating margin was calculated as 1.1462tCO<sub>2</sub>/MWh.

#### Step 4:

The build margin was calculated using Option 1 of the tool. The build margin (BM) was determined by selecting the power units on the grid that met the requirements in the VCS revisions for two separate sets. The first set indicates the 5 most recent commissioned plants. The second set indicates the most recent commissioned plants that contributes a minimum of 20% to the total generation on the grid. The set that contributes the most generation is selected for calculating the BM.

The first set of power plants is determined as per the table below.

**Table 2 SET<sub>5 units</sub>**

| Unit                                                         | Commissioning Date | Generation           |
|--------------------------------------------------------------|--------------------|----------------------|
| TWE Golden Valley Wind Power Project                         | 01-May-2021        | 509,303 MWh          |
| GS11949 Small-scale solar electrical programme, South Africa | 16-December-2020   | 22,500 MWh           |
| Solar Energy Programme for South Africa                      | 01-February-2019   | 381,930 MWh          |
| Longyuan Mulilo De Aar Maanhaarberg Wind Energy Facility     | 31-October-2017    | 290,500 MWh          |
| Longyuan Mulilo De Aar 2 North Wind Energy Facility          | 31-October-2017    | 439,600 MWh          |
| <b>Total</b>                                                 |                    | <b>1,643,833 MWh</b> |

This set does not comprise over 20 percent of the annual generation. Therefore, the next set is determined as per the table below.

**Table 3 SET<sub>>=20 per cent</sub>**

| Unit                         | Commissioning Date | Annual Generation |
|------------------------------|--------------------|-------------------|
| Gourikwa                     | 01-July-2007       | 2,038,316 MWh     |
| Medupi                       | 22-August-2015     | 22,626,444 MWh    |
| Kusile                       | 30-August-2017     | 10,262,515 MWh    |
| Green Power For South Africa | 31-May-2013        | 1,219,826 MWh     |

| Unit                                                                             | Commissioning Date | Annual Generation |
|----------------------------------------------------------------------------------|--------------------|-------------------|
| South African Grid Connected Wind Farm Programme                                 | 01-April-2014      | 318,056 MWh       |
| TWE Golden Valley Wind Power Project                                             | 01-May-2021        | 509,303 MWh       |
| GS11949 Small-Scale Solar Electrical Programme, South Africa                     | 16-December-2020   | 22,500 MWh        |
| Solar Energy Programme For South Africa                                          | 01-February-2019   | 381,930 MWh       |
| Longyuan Mulilo De Aar Maanhaarberg Wind Energy Facility                         | 31-October-2017    | 290,500 MWh       |
| Longyuan Mulilo De Aar 2 North Wind Energy Facility                              | 31-October-2017    | 439,600 MWh       |
| Amakhala Emoyeni Grid Connected 138.6 MW Wind Farm, Phase 1, South Africa        | 15-June-2016       | 450,559 MWh       |
| South Africa Wind Energy                                                         | 01-January-2016    | 94,871 MWh        |
| West Coast 1 Wind Farm In South Africa                                           | 01-April-2015      | 293,400 MWh       |
| Renewable Energy Carbon Programme For Africa (RECPA)                             | 01-March-2015      | 140,180 MWh       |
| Grid Connected Photovoltaic (PV) Renewable Electricity Generating Facilities Poa | 09-January-2015    | 20,500 MWh        |
| South African Large Scale Grid Connected Solar Park Programme                    | 01-January-2015    | 66,395 MWh        |
| Cookhouse Wind Farm In South Africa                                              | 19-November-2014   | 372,500 MWh       |
| Kathu Grid Connected 100 MW Solar Park, South Africa                             | 01-November-2014   | 260,074 MWh       |
| Red Cap Kouga Wind Farm                                                          | 06-April-2014      | 290,500 MWh       |
| Karoo Renewable Energy Facility (Nobelsfontein Solar PV)                         | 01-January-2014    | 94,527 MWh        |
| Karoo Renewable Energy Facility (Nobelsfontein Wind)                             | 01-January-2014    | 878,438 MWh       |
| Dassieklip Wind Energy Facility In South Africa                                  | 01-January-2014    | 74,267 MWh        |
| South African Wind Power Projects                                                | 01-January-2014    | 93,093 MWh        |

| Unit                                                  | Commissioning Date | Annual Generation     |
|-------------------------------------------------------|--------------------|-----------------------|
| Prieska Grid Connected 20 MW Solar Park, South Africa | 01-November-2013   | 39,483 MWh            |
| Bokpoort                                              | 01-October-2013    | 224,000 MWh           |
| Hopefield Wind Energy Facility In South Africa        | 01-October-2013    | 188,500 MWh           |
| Southern African Renewable Energy (SARE) Programme    | 12-July-2013       | 54,785 MWh            |
| Wind And Solar Poa In South Africa                    | 01-July-2013       | 18,000 MWh            |
| Coega IDZ Windfarm                                    | 01-June-2010       | 5,500 MWh             |
| <b>Total</b>                                          |                    | <b>41,768,562 MWh</b> |

Since  $SET_{>=20 \text{ units}}$  comprises the larger generation, it is selected as  $SET_{\text{SAMPLE}}$ . The equation below is applied based on this set of power plants.

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (\text{Tool 7, Equation 15})$$

Where:

$EF_{grid,BM,y}$  = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$EG_{m,y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year y (MWh)

$EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year y (tCO<sub>2</sub>/MWh)

The resulting build margin was calculated as 0.7776tCO<sub>2</sub>/MWh.

#### Step 5:

The combined margin was calculated using the default weighting as per VT0011 using the equation below.

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad \text{Tool 07 version 7, Equation 16}$$

Where:

$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> emission factor in year y (t CO<sub>2</sub>/MWh)

$EF_{grid,OM,y}$  = Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$w_{OM}$  = Weighting of operating margin emissions factor (per cent)

$EF_{grid,BM,y}$  = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh)

$w_{BM}$  = Weighting of build margin emissions factor (per cent)

Applying the default weights in VT0011 of 0.5 for both the operating and build margin emission factors results in a combined margin of 0.9619 tCO<sub>2</sub>/MWh.

# APPENDIX 4: STOVE TYPES IN THE DIRECT MONITORING PILOT

The following table describes the electric stoves found in the homes of the Wonderbag users that participated in the direct monitoring pilot, compared to the stoves that were newly purchased and used in the actual pilot.

**Table 4: Stove types in direct monitoring pilot**

| User No | Stove Type Home             | Stove Type at Community Kitchen | Stove Rating at Community Kitchen |
|---------|-----------------------------|---------------------------------|-----------------------------------|
| 1       | Essential 2 Plate Spiral    | Diamond 2 Plate Spiral          | 2000W                             |
| 2       | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 3       | Candere 2 Plate Spiral Mini | Diamond 2 Plate Spiral          | 2000W                             |
| 4       | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 5       | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 6       | Defy Compact 4 Plate Solid  | Defy Compact 4 Plate Solid      | 10000W - 3000W depending on plate |
| 7       | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 8       | Essential 2 Plate Spiral    | Diamond 2 Plate Spiral          | 2000W                             |
| 9       | Essential 2 Plate Spiral    | Diamond 2 Plate Spiral          | 2000W                             |
| 10      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 11      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 12      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 13      | Candere 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 14      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 15      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 16      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 17      | Logik 2 Plate Spiral        | Diamond 2 Plate Spiral          | 2000W                             |
| 18      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 19      | Logik 2 Plate Spiral        | Diamond 2 Plate Spiral          | 2000W                             |
| 20      | Diamond 2 Plate Spiral      | Diamond 2 Plate Spiral          | 2000W                             |
| 21      | Sunbeam 2 Plate Spiral      | Sunbeam 2 Plate Spiral          | 2000W                             |
| 22      | Dixon 2 Plate Solid         | 2 Plate Solid                   | 1500W                             |
| 23      | Blutech 2 Plate Solid       | Blutech 2 Plate Solid           | 1500W                             |

| User No | Stove Type Home          | Stove Type at Community Kitchen | Stove Rating at Community Kitchen |
|---------|--------------------------|---------------------------------|-----------------------------------|
| 24      | Sunbeam 2 Plate Spiral   | Sunbeam 2 Plate Spiral          | 2000W                             |
| 25      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 26      | Blutech 2 Plate Solid    | Blutech 2 Plate Solid           | 1500W                             |
| 27      | Sunbeam 2 Plate Spiral   | Sunbeam 2 Plate Spiral          | 2000W                             |
| 28      | Blutech 2 Plate Solid    | Blutech 2 Plate Solid           | 1500W                             |
| 29      | Blutech 2 Plate Solid    | Blutech 2 Plate Solid           | 1500W                             |
| 30      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 31      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 32      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 33      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 34      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 35      | Home Square 2 Plate Mini | Diamond 2 Plate Spiral          | 2000W                             |
| 36      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 37      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 38      | Good Mama 2 Plate Spiral | Diamond 2 Plate Spiral          | 2000W                             |
| 39      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 40      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 41      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 42      | Essential 2 Plate Spiral | Diamond 2 Plate Spiral          | 2000W                             |
| 43      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 44      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 45      | Condere 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 46      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 47      | Essential 2 Plate Spiral | Diamond 2 Plate Spiral          | 2000W                             |
| 48      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 49      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 50      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 51      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 52      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 53      | Home Square 2 Plate Mini | Diamond 2 Plate Spiral          | 2000W                             |
| 54      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 55      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 56      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 57      | Good Mama 2 Plate Spiral | Diamond 2 Plate Spiral          | 2000W                             |
| 58      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 59      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 60      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 61      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 62      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |

| User No | Stove Type Home          | Stove Type at Community Kitchen | Stove Rating at Community Kitchen |
|---------|--------------------------|---------------------------------|-----------------------------------|
| 63      | Essential 2 Plate Spiral | Diamond 2 Plate Spiral          | 2000W                             |
| 64      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 65      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 66      | Condere 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 67      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 68      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 69      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 70      | Logik 2 Plate Spiral     | Diamond 2 Plate Spiral          | 2000W                             |
| 71      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 72      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 73      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 74      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 75      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 76      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 77      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 78      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 79      | Diamond 2 Plate Spiral   | Diamond 2 Plate Spiral          | 2000W                             |
| 80      | Logik 2 Plate Spiral     | Diamond 2 Plate Spiral          | 2000W                             |