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[according to ISO 14025, EN 15804:2012+A2:2019 and EN 15942]



Declaration number: **DAP 019:2024**



## WASHED AGGREGATES – ATOUGUIA QUARRY

ISSUE DATE: **20/12/2024**

VALID UNTIL: **19/12/2029**

**SECIL AGREGADOS, S.A.**



Version 1.4.1 Ed. March 2024



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## 1. GENERAL INFORMATION

### 1.1. The DAPHabitat System

|                   |   |   |
|-------------------|---|---|
| Program operator: | Sustainable Construction Platform<br><a href="http://www.clusterhabitat.pt">www.clusterhabitat.pt</a><br><a href="mailto:geral@clusterhabitat.pt">geral@clusterhabitat.pt</a> |  Cluster Habitat Sustentável |
| Address:          | Departamento Engenharia Civil<br>Universidade de Aveiro<br>3810-193 Aveiro  |   |
| Email address:    | <a href="mailto:deptecnico@clusterhabitat.pt">deptecnico@clusterhabitat.pt</a>  |   |
| Telephone number: | (+351) 234 401576   |   |
| Website:          | <a href="http://www.daphabitat.pt">www.daphabitat.pt</a>  |   |
| Logo:             |    |   |

### 1.2. EPD owner

|   |  |
|---|--|
| Name of the owner:  | Secil Agregados, S.A.  |
| Production site:  | Serra da Atouguia – 2580-079 Ota   |
| Address (head office):                                    | Av. Eng. Duarte Pacheco 19, 7º – 1070-100 Lisboa - Portugal  |
| Telephone:  | (+351) 217 927 100   |
| E-mail:   | <a href="mailto:apoio.tecnico@secil.pt">apoio.tecnico@secil.pt</a>   |
| Website:  | <a href="https://www.secil.pt/">https://www.secil.pt/</a>  |
| Logo:   |   |
| Information concerning the applicable management Systems: | NP EN ISO 9001 - Quality management systems  |
| Specific aspects regarding the production:                | Main CAE: 08121 - Extraction of gravel, sand and crushed stone;<br>Secondary CAE: 08112 - Extraction of ornamental granite and similar stones  |
| Organization's environmental policy:                      | Commitments made by SECIL as part of its Environmental Responsibility and Protection policy:<br>To guarantee a standard of responsible action that reconciles the exploitation of natural resources with the maintenance and development of the ecosystems in which it operates. Mitigate the impacts of its operations by adopting the best available technologies and best practices and by providing adequate training for its employees. Promote biodiversity in the territories under its management. Reduce the carbon impact of its activity, specifically by promoting the use of secondary raw materials and alternative fuels. To make data on its environmental performance available to the public on a regular basis. |

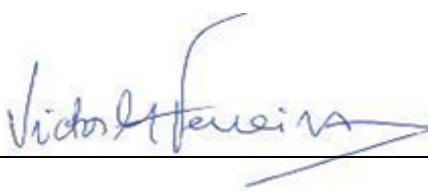
### 1.3. Information concerning the EPD

|   |  |  |
|---|--|--|
| Authors:  | c5Lab - Sustainable Construction Materials Association                                       |  Sustainable Construction Materials Association |
| Contact of the authors:   | Edifício Central Park, Rua Central Park 6   2795-242 LINDA-A-VELHA<br>Email: info@c5lab.pt   |  |
| Issue date:   | 20/12/2024   |  |
| Registration date:  | 03/01/2025   |  |
| Registration number:  | DAP 019:2024   |  |
| Valid until:  | 19/12/2029   |  |
| Representativity of the EPD<br>(location, manufacturer,<br>group of manufacturers): | EPD for washed aggregates produced at the Atouguia quarry belonging to Secil Agregados, S.A. |  |
| Where to consult explanatory<br>material:   | <a href="https://www.secil.pt/">https://www.secil.pt/</a>                                    |  |
| Type of EPD:  | Cradle-to-gate (A1-A3) EPD.  |  |

### 1.4. Demonstration of the verification

|  |   |
|--|---|
| External independent verification, accordingly, with the standard ISO 14025:2010 and EN 15804:2012+A2:2019 |   |
| Certification Body   | Verifier  |
|                         |  |
| (CERTIF – Associação para a Certificação)  | (Marisa Almeida)  |

### 1.5. EPD Registration

|  |
|--|
| Programme operator   |
|  |

(Plataforma para a Construção Sustentável)

## 1.6. PCR (product category rules) basic model

|   |  |
|---|--|
| <b>Name:</b>  | PCR: Basic module for construction products and services   |
| <b>Issue date:</b>  | Edition August 2023  |
| <b>Number of registrations on the data base:</b>          | RCP-mb001  |
| <b>Version:</b>   | Version 2.3  |
| <b>Identification and contact of the coordinator (s):</b> | Marisa Almeida   marisa@ctcv.pt<br>Luís Arroja   arroja@ua.pt<br>José Dinis Silvestre   jose.silvestre@ist.utl.pt  |
| <b>Identification and contact of the authors:</b>         | Marisa Almeida   marisa@ctcv.pt<br>Luís Arroja   arroja@ua.pt<br>José Silvestre   jds@civil.ist.utl.pt<br>Fausto Freire<br>Cristina Rocha<br>Ana Paula Duarte<br>Ana Cláudia Dias<br>Helena Gervásio<br>Victor Ferreira<br>Ricardo Mateus<br>António Baio Dias |
| <b>Composition of the Sectorial Panel:</b>                | -  |
| <b>Consultation period:</b>                               | 18/11/2015 - 18/01/2016  |
| <b>Valid until:</b>                                       | 01/06/2027   |

CEN standard EN 15804 serves as the core Product Category Rules (PCR)

## 1.7. Relevant c-PCR (Complementary product category rules)

Not Applicable.

## 1.8. Information concerning the product/product class

| <b>Identification of the product:</b>   | Agregados Lavados – Pedreira Atouguia (Washed Aggregates)  |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
|---|--|---|---|---------|-------------------|---------------|---|---|--|--|---|---|-----------------------|---|---|---|------|---------------------------------------|---|-----------------------|-------|---|---|
| <b>Illustration of the product:</b>   |    |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <b>Brief description of the product:</b>  | <p>Industrial aggregates are granular materials, of mineral origin and generally inert. They are used in different construction products and their choice has a strong influence on the quality and behaviour of the end products.</p>   |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <b>Main technical characteristics of the product:</b>   | <p>The Washed Aggregates product class comprises a set of 4 (four) products manufactured by Secil Agregados, S.A. at the Atouguia Quarry and listed in Table 1.</p> <p><b>Table 1 - Product Technical Characteristics and Performance Declarations.</b></p> <table border="1"> <thead> <tr> <th>Product</th> <th>Granulometry (mm)</th> <th>Description</th> <th>Performance Declaration (In Portuguese)</th> </tr> </thead> <tbody> <tr> <td><i>Areia Lavada de Pedreira</i></td> <td>0/4</td> <td>Sand extracted from quarries and washed to remove clay</td> <td><a href="https://bit.ly/DOP2_Areia_Lavada_de_Pedreira">https://bit.ly/DOP2_Areia_Lavada_de_Pedreira</a></td> </tr> <tr> <td><i>Bago de Arroz Lavado</i></td> <td>2/6</td> <td>Intermediate-sized washed aggregate</td> <td><a href="https://bit.ly/DOP3_Bago_de_Arroz_Lavado">https://bit.ly/DOP3_Bago_de_Arroz_Lavado</a></td> </tr> <tr> <td><i>Brita 1 Lavada</i></td> <td>6/14</td> <td>Washed gravel of smaller nominal size</td> <td><a href="https://bit.ly/DOP4_Brita_1_Lavada">https://bit.ly/DOP4_Brita_1_Lavada</a></td> </tr> <tr> <td><i>Brita 2 Lavada</i></td> <td>11/22</td> <td>Intermediate nominal size washed gravel</td> <td><a href="https://bit.ly/DOP5_Brita_2_Lavada">https://bit.ly/DOP5_Brita_2_Lavada</a></td> </tr> </tbody> </table> |   |   | Product | Granulometry (mm) | Description   | Performance Declaration (In Portuguese) | <i>Areia Lavada de Pedreira</i>   | 0/4  | Sand extracted from quarries and washed to remove clay | <a href="https://bit.ly/DOP2_Areia_Lavada_de_Pedreira">https://bit.ly/DOP2_Areia_Lavada_de_Pedreira</a> | <i>Bago de Arroz Lavado</i>   | 2/6                   | Intermediate-sized washed aggregate   | <a href="https://bit.ly/DOP3_Bago_de_Arroz_Lavado">https://bit.ly/DOP3_Bago_de_Arroz_Lavado</a> | <i>Brita 1 Lavada</i>                                   | 6/14 | Washed gravel of smaller nominal size | <a href="https://bit.ly/DOP4_Brita_1_Lavada">https://bit.ly/DOP4_Brita_1_Lavada</a> | <i>Brita 2 Lavada</i> | 11/22 | Intermediate nominal size washed gravel | <a href="https://bit.ly/DOP5_Brita_2_Lavada">https://bit.ly/DOP5_Brita_2_Lavada</a> |
| Product   | Granulometry (mm)  | Description   | Performance Declaration (In Portuguese)   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Areia Lavada de Pedreira</i>   | 0/4  | Sand extracted from quarries and washed to remove clay  | <a href="https://bit.ly/DOP2_Areia_Lavada_de_Pedreira">https://bit.ly/DOP2_Areia_Lavada_de_Pedreira</a> |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Bago de Arroz Lavado</i>   | 2/6  | Intermediate-sized washed aggregate   | <a href="https://bit.ly/DOP3_Bago_de_Arroz_Lavado">https://bit.ly/DOP3_Bago_de_Arroz_Lavado</a>         |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Brita 1 Lavada</i>   | 6/14   | Washed gravel of smaller nominal size   | <a href="https://bit.ly/DOP4_Brita_1_Lavada">https://bit.ly/DOP4_Brita_1_Lavada</a>                     |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Brita 2 Lavada</i>   | 11/22  | Intermediate nominal size washed gravel   | <a href="https://bit.ly/DOP5_Brita_2_Lavada">https://bit.ly/DOP5_Brita_2_Lavada</a>                     |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <b>Description of the product's application/use:</b>  | <p>Aggregates have specific properties suitable for civil engineering works and can in particular be used in the manufacture of concrete, mortar and bituminous mixtures or used without any hydraulic or other binder and in hydraulic protection or regulation works.</p>  |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <b>Placing on the market / Rules of application in the market / Technical rules of the product:</b> | <p><b>Table 2 - Technical Product Standards and Intended Uses.</b></p> <table border="1"> <thead> <tr> <th>Product</th> <th>Technical Rules</th> <th>Intended uses</th> </tr> </thead> <tbody> <tr> <td><i>Areia Lavada de Pedreira</i></td> <td><b>Concrete – NP EN 12620:2002+A1:2008;</b><br/><b>Mortar – NP EN 13139:2005;</b><br/><b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b></td> <td>Use in concrete, mortar and non-bonded materials for buildings, roads and other civil engineering works.</td> </tr> <tr> <td><i>Bago de Arroz Lavado</i></td> <td><b>Concrete – NP EN 12620:2002+A1:2008;</b></td> <td rowspan="4">Use in:<ul style="list-style-type: none"> <li>• Concrete for buildings, roads and other civil engineering work;</li> <li>• Bituminous mixtures and surface treatments for roads, airports and other traffic areas;</li> <li>• Unbound materials for use in civil engineering and road construction.</li> </ul></td> </tr> <tr> <td><i>Brita 1 Lavada</i></td> <td><b>Bituminous mixtures – NP EN 13043:2004;</b><br/><b>NP EN 13043/AC:2010;</b><br/><b>NP EN 13043:2004 ERRATA 1:2018;</b></td> </tr> <tr> <td><i>Brita 2 Lavada</i></td> <td><b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b></td> </tr> </tbody> </table>   |   |   | Product | Technical Rules   | Intended uses | <i>Areia Lavada de Pedreira</i>         | <b>Concrete – NP EN 12620:2002+A1:2008;</b><br><b>Mortar – NP EN 13139:2005;</b><br><b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b> | Use in concrete, mortar and non-bonded materials for buildings, roads and other civil engineering works. | <i>Bago de Arroz Lavado</i>                            | <b>Concrete – NP EN 12620:2002+A1:2008;</b>   | Use in: <ul style="list-style-type: none"> <li>• Concrete for buildings, roads and other civil engineering work;</li> <li>• Bituminous mixtures and surface treatments for roads, airports and other traffic areas;</li> <li>• Unbound materials for use in civil engineering and road construction.</li> </ul> | <i>Brita 1 Lavada</i> | <b>Bituminous mixtures – NP EN 13043:2004;</b><br><b>NP EN 13043/AC:2010;</b><br><b>NP EN 13043:2004 ERRATA 1:2018;</b> | <i>Brita 2 Lavada</i>   | <b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b> |      |                                       |   |                       |       |   |   |
| Product   | Technical Rules  | Intended uses   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Areia Lavada de Pedreira</i>   | <b>Concrete – NP EN 12620:2002+A1:2008;</b><br><b>Mortar – NP EN 13139:2005;</b><br><b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b>  | Use in concrete, mortar and non-bonded materials for buildings, roads and other civil engineering works.  |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Bago de Arroz Lavado</i>   | <b>Concrete – NP EN 12620:2002+A1:2008;</b>  | Use in: <ul style="list-style-type: none"> <li>• Concrete for buildings, roads and other civil engineering work;</li> <li>• Bituminous mixtures and surface treatments for roads, airports and other traffic areas;</li> <li>• Unbound materials for use in civil engineering and road construction.</li> </ul> |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Brita 1 Lavada</i>   | <b>Bituminous mixtures – NP EN 13043:2004;</b><br><b>NP EN 13043/AC:2010;</b><br><b>NP EN 13043:2004 ERRATA 1:2018;</b>  |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <i>Brita 2 Lavada</i>   | <b>Non-Bonded Materials – NP EN 13242:2002+A1:2010;</b>  |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |
| <b>Quality control:</b>   | <p>The Washed Aggregates produced comply with CE marking requirements and their quality is controlled in compliance with Regulation (EU) No. 305/2011 of 9 March 2011.</p>   |   |   |         |                   |               |   |   |  |  |   |   |                       |   |   |   |      |                                       |   |                       |       |   |   |

|  |  |
|--|--|
| <b>Special delivery conditions:</b>                | Disturbances to the normal supply of washed aggregates due to unforeseeable circumstances or force majeure, such as strikes, riots, equipment breakdowns and accidents and power cuts by the entities responsible for supplying them, if they are not attributable to Secil Agregados, S.A., do not constitute a breach of the supply contract and will therefore not give rise to the payment of any compensation. When the aggregates are delivered to the site and before they are unloaded, the Customer or its representative must check on the delivery note that the product corresponds to that requested. Signing the delivery note implies confirmation of what it says. |
| <b>Components and substances to declare:</b>       | Not Applicable.  |
| <b>Where explanatory material may be obtained:</b> | <a href="https://www.secil.pt/">https://www.secil.pt/</a>  |
| <b>History of the LCA studies:</b>                 | Not Applicable.  |

## 1.9. Calculation rules of the LCA

|  |   |
|--|---|
| Functional unit:   | Not Applicable.   |
| Declared unit:   | 1 tonne of Washed Aggregates  |
| System boundaries:   | Cradle-to-Gate EPD. From the extraction and processing of raw materials in the quarry to the product dispatch procedure.  |
| Criteria for the exclusion:  | <p>Processes that fulfil the exclusion criteria stipulated in EN 15804 of 1% use of primary energy (renewable and non-renewable) and 1% of the inputs or outputs (in mass) of the process, not exceeding 5% of the total use of mass and energy in the production stage, A1-A3, were excluded from this EPD:</p> <ul style="list-style-type: none"> <li>• Equipment maintenance</li> <li>• Office activity</li> <li>• Acetylene</li> <li>• Domestic effluents</li> <li>• Absorbents and filter materials</li> <li>• Oil filters</li> <li>• Sieving Nets</li> <li>• Other minor components</li> </ul>  |
| Assumption and limitations   | <p>The missing data refers to indicators that cannot be acquired on site, namely: dust emissions from quarry activity; emissions from quarrying machinery, loading and blasting. This missing information was therefore extracted from generic processes available in the Ecoinvent 3.10 database.</p>  |
| Quality and other characteristics about the information used in the LCA: | <p>The quality analysis was carried out based on the 'UN Environmental Global guidance on LCA database development' in accordance with the criteria stipulated in Annex E of EN 15804:2012+A2:2019. The quality of the data was categorised broadly between fair and very good on a 5-level qualitative scale from very poor to very good. The information on aggregate production is 1 year old, using mostly primary data collected directly from the quarry's industrial statistics and is representative of the reality of production.</p> <p>Information for background processes not provided by the quarry, and over which Secil Agregados, S.A. has no direct influence, was obtained using generic data from the Ecoinvent 3.10 database (updated in April 2024). This data was selected to provide geographical and technological coverage that fulfils the data quality criteria stipulated in Annex E of EN 15804:2012+A2:2019.</p> <p>Electricity production for the year 2023 was modelled using information obtained directly from the regulator of energy production and electricity infrastructure in Portugal. The results obtained are robust. The LCA was carried out using SimaPro 9.6.0.1 software.</p> |
| Allocation rules:  | <p>To avoid the allocation of co-products, the inventory and impact analyses were carried out individually for each of the four products. However, mass allocation procedures are necessary for the consumption of energy, water, fuel, other consumables and waste.</p> <p>Knowing the power of each equipment and the total electricity consumption in the crushing and washing operation, the distribution of consumption by equipment was carried out. In the crushing operation, consumption was distributed proportionally for each product, according to the power of the equipment used, the frequency of its use and the share of production associated with each piece of equipment. In the case of washing fine aggregates, electricity consumption for washing fines is solely associated with the production of washed sand. When washing coarse aggregates, electricity consumption was distributed according to the relative production masses of each aggregate.</p>  |

|  |  |
|--|--|
|  | <p>The distribution of lubricating oil consumption for each product was calculated in a similar way to electricity consumption, using the power of the equipment used, the frequency of its use and the share of production associated with each piece of equipment. Diesel consumption associated with the processes of blasting, loading and transporting each product was determined from overall consumption, using the relative production masses of each unit. Water consumption was distributed to each washed product in proportion to the relative production mass of each aggregate, in relation to the total production mass of the washed products.</p> <p>The generation of dry solid waste associated with each product was distributed proportionally to its production. Sludge formation is distributed proportionally to the production of each washed product.</p> |
| Software used for the assessment:              | SimaPro 9.6.0.1 – PRÉ Sustainability   |
| Background database used for the LCA:          | Ecoinvent Database v3.10 – Ecoinvent   |
| Comparability of EPD for construction products | The EPD of construction products and services cannot be comparable in case they are not produced according to EN 15804 and EN 15942 and according to the comparability conditions determined by ISO 14025.   |

## 1.10. Use of average environmental performance

The 'Washed Aggregates' class of products produced by Secil Agregados, S.A. at the Atouguia quarry, and used as building materials, differ mainly in their granulometry, even though the raw material (limestone) and production method (crushing, screening and washing) are identical. To provide robust results and reduce errors associated with the use of average values, the impacts of each of the washed aggregates are presented separately, thus avoiding the use of average environmental performance for a series of products with different production stages and final application

The average difference between the maximum and minimum values (for the core environmental impact indicators) is around 2 per cent, with the greatest variability (7%) occurring only in one core environmental impact category (Water Deprivation Potential). There are occasions when there are greater differences, but these occur in optional impact categories or secondary indicators.

## 1.11. Technical information for Reference Service Life (RSL)

Not Applicable.

## 1.12. Flow diagram of input and output of the processes

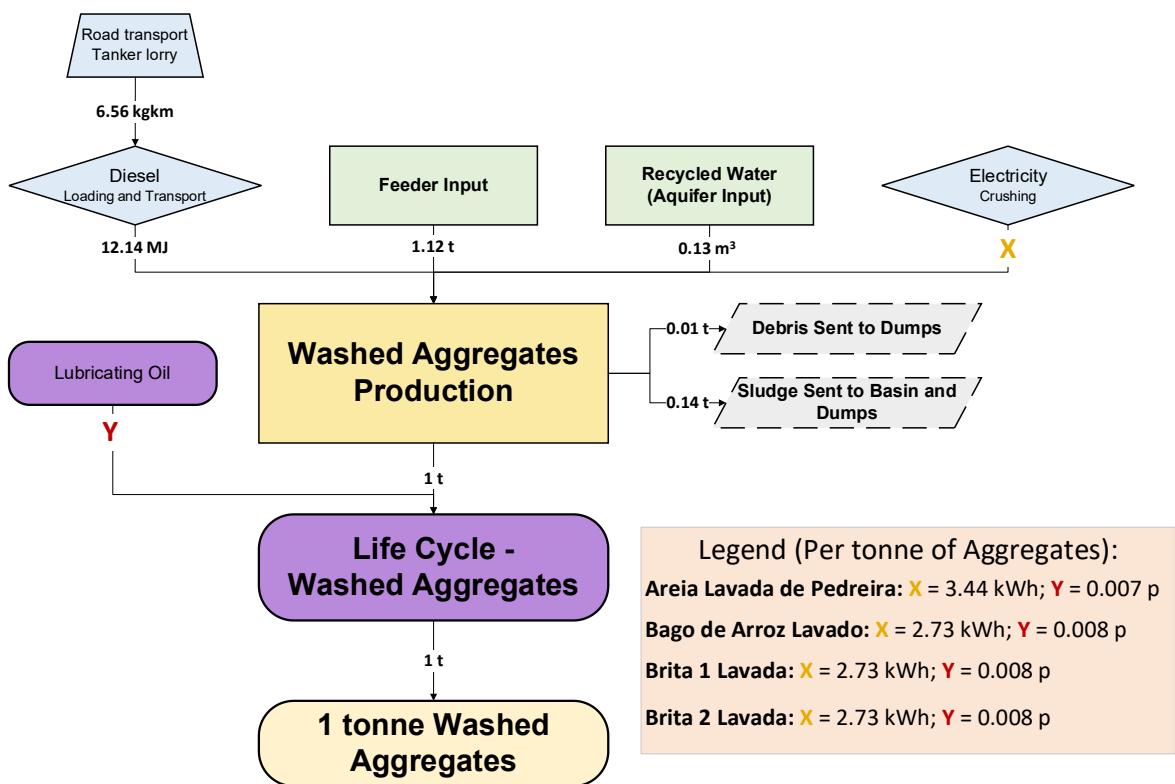


Figure 1: Simplified flowchart for the inventory of Washed Aggregates production.

## 2. CORE ENVIRONMENTAL IMPACT INDICATORS

### 2.1. Description of the system boundaries

(✓ = included; ND = module not declared)

| PRODUCT STAGE       |           |               | CONSTRUCTION PROCESS STAGE |                                   | USE STAGE |             |        |             |               |                        |                       | END OF LIFE STAGE            |           |                  |          | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY |  |
|---------------------|-----------|---------------|----------------------------|-----------------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|------------------------------|-----------|------------------|----------|---|--|
| Raw material supply | Transport | Manufacturing | Transport                  | Construction installation process | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-constructions, demolition | Transport | Waste processing | Disposal | Re-use, recovery, recycling potential         |  |
| A1                  | A2        | A3            | A4                         | A5                                | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                           | C2        | C3               | C4       | D   |  |
| ✓                   | ✓         | ✓             | ND                         | ND                                | ND        | ND          | ND     | ND          | ND            | ND                     | ND                    | ND                           | ND        | ND               | ND       | ND  |  |

The system boundaries are circumscribed for the Product Stage, covering modules A1-A3. All washed aggregates produced at the Atouguia quarry are produced as described in the following points:

#### Blasting

The first stage of aggregate production consists of blasting, which involves extracting large blocks of rock from the exploration front. This process begins with the selection of the area to be blasted and subsequent drilling, followed by the placement of explosives. The detonation of these explosives fragments the rock mass. After the explosion, the area is cleared, and the explosive packaging is incinerated on site. If necessary, deforestation is carried out and the removed land is stored for later landscaping.

#### Crushing and Screening

The material obtained from blasting is transported to the crushing area, where the first reduction in the size of the rock blocks takes place. This process begins with the rock being deposited in a feeding system, where larger blocks are reduced and sent to a screen that separates the smaller particles, known as 'Detritos' (Debris), from those suitable for producing aggregates, which are taken to a primary impact crusher.

This impact crusher is responsible for fragmenting the larger rocks, which are then passed on to a system of additional screens that carry out a new particle size separation. The particles that are still larger than desired are redirected to a secondary crusher (hammer mill) which carries out additional crushing, further reducing the particle size. Subsequently, the material is again subjected to a screening process, where it is classified by particle size, resulting in different types of aggregates, ready for commercialisation or for subsequent processes, such as washing. There may be recirculation of material whose size is larger than intended after passing through the crushers. This material is re-crushed until it reaches the required size.

### Aggregate washing and screening system

After crushing, the 'Areia Lavada de Pedreira', 'Bago de Arroz Lavado', 'Brita 1 Lavada' e 'Brita 2 Lavada' aggregates go through an additional washing process to remove fines and clay impurities. In winter, the aggregates are washed either in the washer or in the logwasher, while in summer both systems are used together (in dry weather, the aggregates are deliberately produced in blasting zones with a higher clay content). After washing, the aggregates are sieved again and sorted into different grain sizes. The water used in the washing process is recycled and reused.

- **Coarse Aggregates:** These are washed and screened, with the resulting slurry being treated to remove fine particles.
- **Fine Aggregates:** These are washed and separated in a hydrocyclone, which removes the water and fines from the larger particles.

### Water Collection and Recycling System

The water used in the washing process comes from three sources: recycled water, water taken from the aquifer, and precipitation water. Most of the water used is recycled, and the recycling system involves clarifying the water, where the sludge is separated, and the water is treated with flocculant before being reused. Around 55 per cent is recycled water, 44 per cent is taken from the aquifer and 1 per cent comes from precipitation.

#### 2.1.1. Justification for the exemption to declare modules C1, C2, C3, C4 and D

Washed aggregates from the SECIL-Atouguia quarry are intermediate construction products that are physically integrated with other products (among others, cement and water in the case of their use in concrete products). They can have different end uses, which are impossible to generalise. In addition, biogenic carbon is not present in the product, so according to standard NP EN 15804:2012+A2:2019 only modules A1-A3 can be declared.

## 2.2. Core environmental impact indicators

| Modules A1-A3               | Global warming potential total;<br>GWP-total | Global warming potential fossil;<br>GWP-fossil | Global warming potential biogenic;<br>GWP-biogenic | Global warming potential land use and land use change;<br>GWP-luluc | Depletion potential of the stratospheric ozone layer;<br>ODP | Acidification potential; AP |
|-----------------------------|--|--|--|---|--|-----------------------------|
| Unit                        | kg CO <sub>2</sub> eq.                       | kg CO <sub>2</sub> eq.                         | kg CO <sub>2</sub> eq.                             | kg CO <sub>2</sub> eq.  | kg CFC 11 eq.  | mol H <sup>+</sup> eq.      |
| <b>Areia Lavada</b>         | 2.75E+00                                     | 2.73E+00                                       | 1.08E-03   | 2.54E-02  | 5.42E-08   | 7.37E-02                    |
| <b>Bago de Arroz Lavado</b> | 2.67E+00                                     | 2.65E+00                                       | 2.93E-04   | 2.21E-02  | 5.22E-08   | 7.35E-02                    |
| <b>Brita 1 Lavada</b>       | 2.67E+00                                     | 2.65E+00                                       | 2.93E-04   | 2.21E-02  | 5.22E-08   | 7.35E-02                    |
| <b>Brita 2 Lavada</b>       | 2.67E+00                                     | 2.65E+00                                       | 2.93E-04   | 2.21E-02  | 5.22E-08   | 7.35E-02                    |

LEGEND:  
 Product stage

| Modules A1-A3               | Eutrophication potential aquatic freshwater;<br>EP-freshwater | Eutrophication potential aquatic marine;<br>EP-marine | Eutrophication potential terrestrial;<br>EP-terrestrial | Formation potential of tropospheric ozone;<br>POCP | Abiotic depletion potential for non-fossil resources<br>ADP-minerals&metals | Abiotic depletion potential for fossil resources potential<br>ADP-fossil | Water (user) deprivation potential;<br>WDP |
|-----------------------------|---|---|---|--|---|--|--|
| Units                       | kg P eq.  | kg N eq.  | mol N eq.   | Kg COVNM eq.                                       | kg Sb eq.   | MJ, P.C.I  | m <sup>3</sup> World eq. deprived          |
| <b>Areia Lavada</b>         | 1.58E-04  | 2.50E-02  | 3.71E-01  | 7.52E-02   | 9.53E-07  | 3.85E+01   | 1.20E+00                                   |
| <b>Bago de Arroz Lavado</b> | 1.56E-04  | 2.49E-02  | 3.71E-01  | 7.50E-02   | 9.53E-07  | 3.69E+01   | 1.11E+00                                   |
| <b>Brita 1 Lavada</b>       | 1.56E-04  | 2.49E-02  | 3.71E-01  | 7.50E-02   | 9.53E-07  | 3.69E+01   | 1.11E+00                                   |
| <b>Brita 2 Lavada</b>       | 1.56E-04  | 2.49E-02  | 3.71E-01  | 7.50E-02   | 9.53E-07  | 3.69E+01   | 1.11E+00                                   |

LEGEND:  
 Product stage

## 2.3. Additional environmental impact indicators

| Modules A1-A3               | Potential incidence of disease due to PM emissions<br>PM | Potential Human exposure efficiency relative to U235<br>IRP | Potential Comparative Toxic Unit for ecosystems<br>ETP-fw | Potential Comparative Toxic Unit for humans, cancer effects<br>HTP-c | Potential Comparative Toxic Unit for humans, not cancer effects<br>HTP-nc | Potential soil quality index<br>SQP |
|-----------------------------|--|---|---|--|---|-------------------------------------|
| Unit                        | Disease incidence  | kBq U 235 eq.   | CTUe  | CTUh   | CTUh  | -                                   |
| <b>Areia Lavada</b>         | 8.61E-07   | 2.32E-01  | 8.50E+01  | 4.32E-07   | 1.79E-06  | 1.08E+02                            |
| <b>Bago de Arroz Lavado</b> | 8.60E-07   | 2.04E-01  | 8.50E+01  | 4.32E-07   | 1.79E-06  | 1.06E+02                            |
| <b>Brita 1 Lavada</b>       | 8.60E-07   | 2.04E-01  | 8.50E+01  | 4.32E-07   | 1.79E-06  | 1.06E+02                            |
| <b>Brita 2 Lavada</b>       | 8.60E-07   | 2.04E-01  | 8.50E+01  | 4.32E-07   | 1.79E-06  | 1.06E+02                            |

LEGEND:  
 Product stage

## 2.4. Indicators describing resource use

| Modules A1-A3               | Primary energy |            |            |            |            |            |
|-----------------------------|----------------|------------|------------|------------|------------|------------|
|                             | EPR            | RR         | TRR        | EPNR       | RNR        | TRNR       |
| Unit                        | MJ, P.C.I.     | MJ, P.C.I. | MJ, P.C.I. | MJ, P.C.I. | MJ, P.C.I. | MJ, P.C.I. |
| <b>Areia Lavada</b>         | 1.21E+01       | 0.00E+00   | 1.21E+01   | 3.85E+01   | 0.00E+00   | 3.85E+01   |
| <b>Bago de Arroz Lavado</b> | 1.06E+01       | 0.00E+00   | 1.06E+01   | 3.69E+01   | 0.00E+00   | 3.69E+01   |
| <b>Brita 1 Lavada</b>       | 1.06E+01       | 0.00E+00   | 1.06E+01   | 3.69E+01   | 0.00E+00   | 3.69E+01   |
| <b>Brita 2 Lavada</b>       | 1.06E+01       | 0.00E+00   | 1.06E+01   | 3.69E+01   | 0.00E+00   | 3.69E+01   |

LEGEND:  
 Product stage

EPR = use of renewable primary energy excluding renewable primary energy resources used as raw materials; RR = use of renewable primary energy resources used as raw materials; TRR = total use of renewable primary energy resources (EPR + RR); EPNR = use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; RNR = use of non-renewable primary energy resources used as raw materials; TRNR = total use of non-renewable primary energy resources (EPNR + RNR);

| Modules A1-A3               | Secondary materials and fuels, and use of water |            |            |                        |
|-----------------------------|---|------------|------------|------------------------|
|                             | MS  | CSR        | CSNR       | Net use of fresh water |
| Unit                        | kg  | MJ, P.C.I. | MJ, P.C.I. | m <sup>3</sup>         |
| <b>Areia Lavada</b>         | 0.00E+00  | 0.00E+00   | 0.00E+00   | 1.55E-01               |
| <b>Bago de Arroz Lavado</b> | 0.00E+00  | 0.00E+00   | 0.00E+00   | 1.53E-01               |
| <b>Brita 1 Lavada</b>       | 0.00E+00  | 0.00E+00   | 0.00E+00   | 1.53E-01               |
| <b>Brita 2 Lavada</b>       | 0.00E+00  | 0.00E+00   | 0.00E+00   | 1.53E-01               |

LEGEND:  
 Product stage

MS = use of secondary material; CSR = use of renewable secondary fuels; CSNR = use of non-renewable secondary fuels.

## 2.5. Other environmental information describing different waste categories

| Modules A1-A3               | Hazardous waste disposed | Non-hazardous waste disposed | Radioactive waste disposed |
|-----------------------------|--------------------------|------------------------------|----------------------------|
| Unit                        | kg                       | kg                           | kg                         |
| <b>Areia Lavada</b>         | 2.47E-04                 | 5.03E+01                     | 5.47E-05                   |
| <b>Bago de Arroz Lavado</b> | 2.41E-04                 | 5.03E+01                     | 4.82E-05                   |
| <b>Brita 1 Lavada</b>       | 2.41E-04                 | 5.03E+01                     | 4.82E-05                   |
| <b>Brita 2 Lavada</b>       | 2.41E-04                 | 5.03E+01                     | 4.82E-05                   |

LEGEND:  
 Product stage

## 2.6. Environmental information describing output flows

| Modules A1-A3        | Components for re-use | Materials for recycling | Materials for energy recovery | Exported energy  |          |                  |
|----------------------|-----------------------|-------------------------|-------------------------------|------------------|----------|------------------|
|                      |                       |                         |                               | Energy carrier 1 | ...      | Energy carrier n |
| Unit                 | kg                    | kg                      | kg                            | MJ               | MJ       | MJ               |
| Areia Lavada         | 0.00E+00              | 9.38E-03                | 0.00E+00                      | 0.00E+00         | 0.00E+00 | 0.00E+00         |
| Bago de Arroz Lavado | 0.00E+00              | 9.51E-03                | 0.00E+00                      | 0.00E+00         | 0.00E+00 | 0.00E+00         |
| Brita 1 Lavada       | 0.00E+00              | 9.51E-03                | 0.00E+00                      | 0.00E+00         | 0.00E+00 | 0.00E+00         |
| Brita 2 Lavada       | 0.00E+00              | 9.51E-03                | 0.00E+00                      | 0.00E+00         | 0.00E+00 | 0.00E+00         |

LEGEND:  
 Product stage

## 2.7. Information describing the biogenic carbon content at the factory gate

| Biogenic carbon content                           | Units | Modules A1-A3 (results) |
|---|-------|-------------------------|
| Biogenic carbon content in product                | Kg C  | Not Applicable.         |
| Biogenic carbon content in accompanying packaging | Kg C  | Not Applicable.         |

## 3. SCENARIOS AND ADDITIONAL TECHNICAL INFORMATION

### 3.1. Scenario and technical information for module D

Not Applicable.

### 3.2. Additional information on release of dangerous substances to indoor air, soil, and water during the use stage

Not Applicable.

#### 4. REFERENCES

- ✓ General Instructions of the DAPHabitat System, Version 2.1, Edition August 2023 (in [www.daphabitat.pt](http://www.daphabitat.pt));
- ✓ PCR – basic module for construction products and services. DAPHabitat System. Version 2.3, August 2023 (in [www.daphabitat.pt](http://www.daphabitat.pt));
- ✓ ISO 14025:2009 Environmental declarations and labels – Type III environmental declarations – Principles and procedures;
- ✓ EN 15804:2012 + A2:2019 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products;
- ✓ EN 15942:2021 Sustainability of construction works – Environmental product declarations – Communication format business-to-business.
- ✓ SECIL AGREGADOS, "Declaração de Desempenho nº 2 - Areia Lavada de Pedreira," 2023.
- ✓ SECIL AGREGADOS, "Declaração de Desempenho nº 3 - Bago de Arroz Lavado," 2023.
- ✓ SECIL AGREGADOS, "Declaração de Desempenho nº 4 - Brita 1 Lavada," 2024.
- ✓ SECIL AGREGADOS, "Declaração de desempenho nº 5 - Brita 2 Lavada," 2023.