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## Document history

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## 1 Executive Summary

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This deliverable refers to tasks 7.1 and 7.2 that are “Planning of *energy island* initiative and demo-cases in housing association in Sopot” and “Concept and installation of measurement systems - data gathering”, respectively. Here we report the detailed information about the energy installations, configurations, data analytics and profiles of the various energy carriers and systems from the Polish pilot site. The deliverable will be verified by the successful measurements and reporting of pilot site system infrastructures.

Where possible, data collected over 2018-2021 was analysed. It was decided to extend the period for data analysis, since 2021 was a non-specific year due to pandemic conditions and does not reflect the typical trends in energy consumption at the estate.

Moreover, the data available for analysis comes from the common areas at WSM that are not set up with separate meters. The media usage and meter readouts from separate end-users are sensitive data and cannot be used here. Nonetheless, the possessed data reflects quite clearly the energy demands for the common areas that can be easily transferred to the requirements for individual flats.

Additional data for media usage by professional tenants, like small companies, shops or internet provider (Vectra), is also available, but since it does not directly represent the energy requirements of WSM, will not be analysed here.

## 2 Description of the WSM site

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As the demonstration site, Własnościowa Spółdzielnia Mieszkaniowa (WSM) im. Adama Mickiewicza in Sopot, Poland was chosen. The role on this partner in the project is:

- Provision of data necessary to develop the assumptions for the concept of the local Energy Island in WP7.
- Preparation and sharing of technical (infrastructure) and media consumption data for project partners.
- Organization and coordination of meetings with community in order to be involved in making decisions on the implementation of investments in the housing community area.
- Contacts with local stakeholders and communication within the WP7 task.
- Designation of a building for demonstration installations.
- Provide project partners with all the input data they need for the socio-economic and business models necessary for the project implementation.
- Providing access to the electrical, heating installations, etc. - necessary for the implementation of the project, and the required area of the housing community for the installation of research and demonstration equipment (photovoltaic installation, energy storage, heat pump and electric vehicle chargers).
- Participation in project meetings. Performing the necessary minor technical works and installations for research purposes from the project budget.

### 2.1 Brief description of WSM Housing Estate

The Estate started in the years 1969 – 72, when the first blocks of flats were built on a hill next to the Nature Reserve at the outskirts of Sopot. Nowadays it consists of 5 eleven-storey residential buildings that are of MBY-110 type and represent a tower-block technology. There is another one located at

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Grottgera Street and two smaller blocks-of-flats at Abrahama Street that are not equipped with elevators. Apart from the ones designated for living, the Estate is also in a possession of set of technical properties that are either rented out, used for storage, garaging or office area for the Estate Management and can be utilized for the project. The buildings are predominantly grouped around Mickiewicza street with a few located at other locations. All buildings owed by the WSM are:

- A. building 55 at Mickiewicza street,
- B. building 57 at Mickiewicza street
- C. building 59 at Mickiewicza street,
- D. building 61 at Mickiewicza street,
- E. building 63 at Mickiewicza street,
- F. Building 43 at Żeromskiego street,
- G. Building 28 A at Abrahama street,
- H. Building 28 B at Abrahamastreet,
- I. Building 6/8 at Grottgera street.

The main group of estate properties A-H is shown in Figure 1; only the building located at Grottgera street that is further away, is missing from here.



**Figure 1 Main grouping of WSM buildings A-H, Administration and Power station are also marked; demonstrator is building C located close to power supply station; scale 1 : 1 000<sup>1</sup>.**

## 2.2 Technical plans and resources available for the area of focus

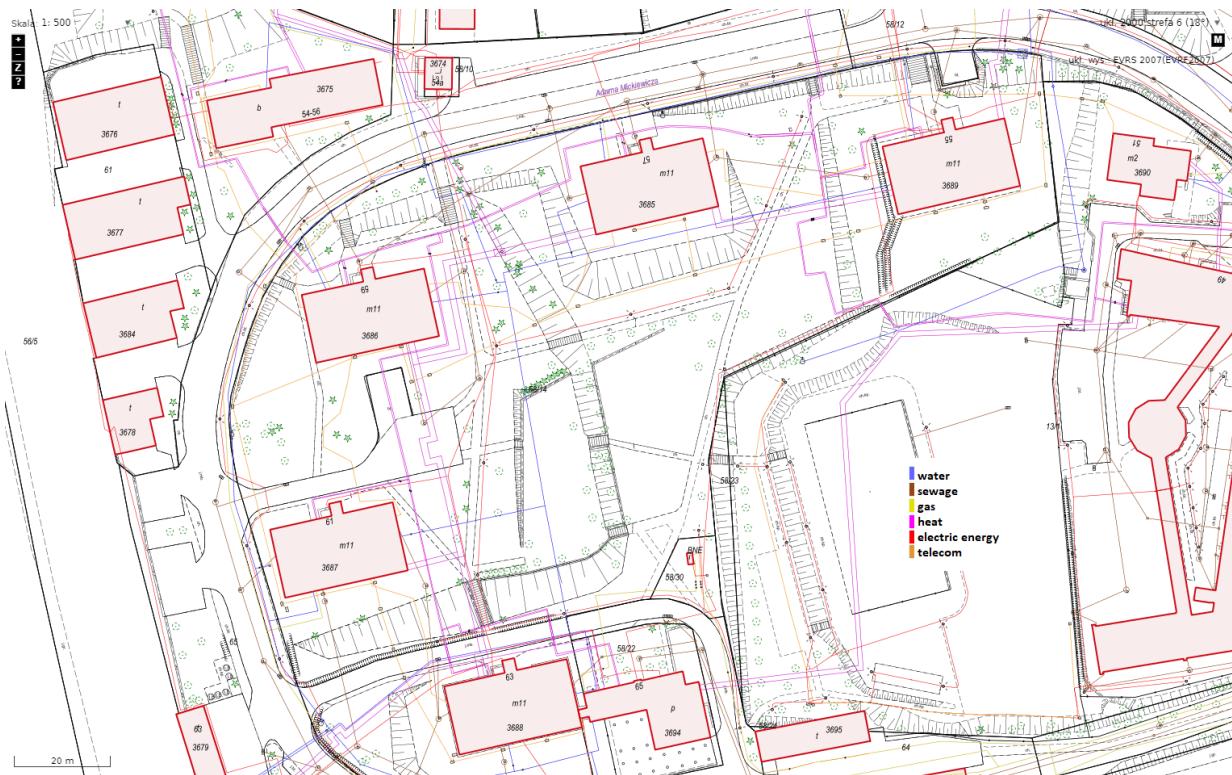
At the Estate, there are a few city grids available, that provide utilities for the inhabitants. These are:

- Water, operated by Aqua Sopot S.A.
- Sewage, operated by Aqua Sopot S.A.
- Gas, operated by PGNIG

<sup>1</sup> Modified map; available at <https://mapa.um.sopot.pl/e-uslugi/portal-mapowy>; date of access 21.03.2022

- Heat, operated by GPEC
  - Electricity, operated by Energa Operator
  - Telecom, operated predominantly by Vectra and UPC

The grid of the utilities is available in the summary scheme in Figure 2; separate images are available in corresponding sections, or in the Annex A for sewage and telecom that are of no interest to the project.



**Figure 2 Grid of media lines available at the estate; colours according to legend, scale 1 : 500<sup>2</sup>**

The buildings that are placed together within the area presented in *Figure 1* are equipped with the energy, heat and water lines of types listed in Table 1. Sample readouts for heat, water and electricity for all the buildings of WSM to date are performed by hand and stored in an analogue form. Sampler readouts for February 22 were digitalised and are presented in the Annex B, Table 8.

All the flats are provided with outsourced water, heat and gas, whereas hot water for household and personal use is provided individually by gas-based bathroom heaters. This is undoubtedly a very dangerous solution that leads annually to even 50 cases of lethal carbon monoxide poisonings in Poland and thus should be eliminated.

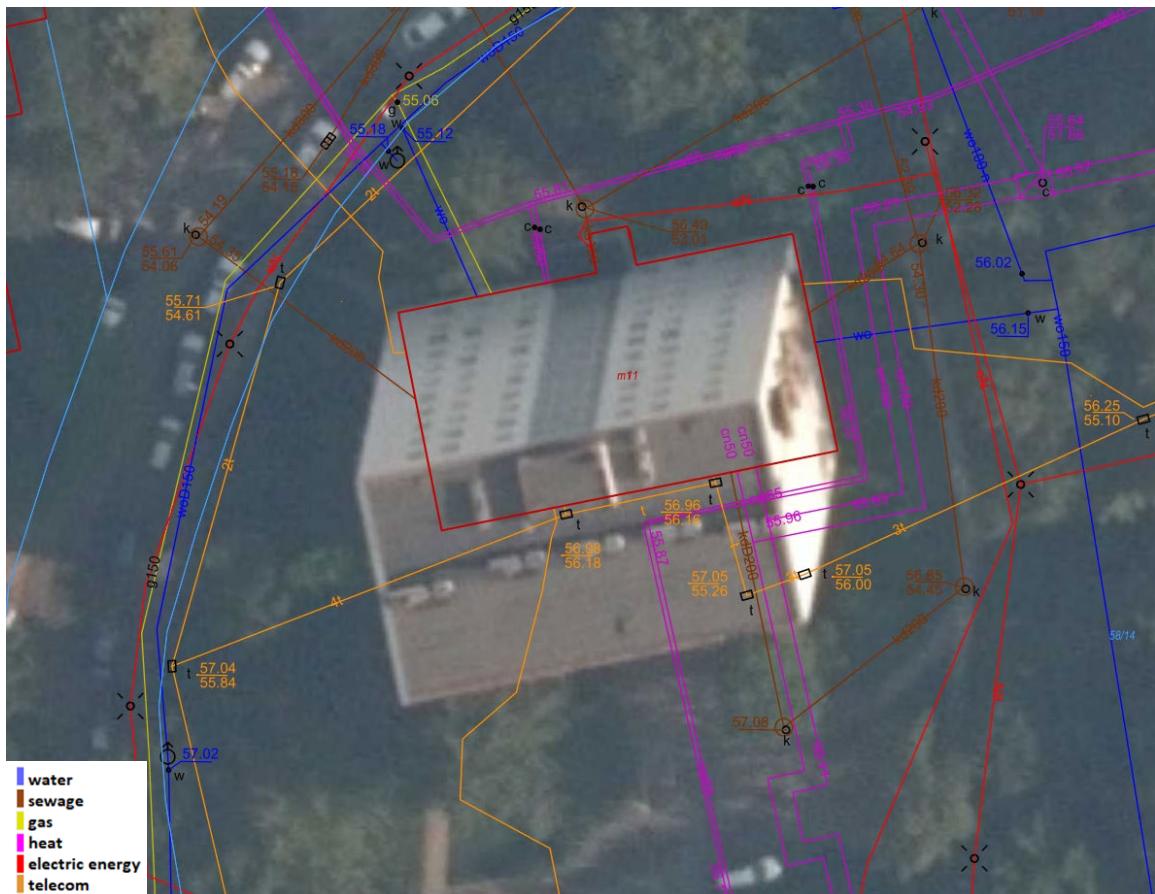
<sup>2</sup> Modified map; available at <https://mapa.um.sopot.pl/e-uslugi/portal-mapowy>; date of access 21.03.2022

**Table 1 Connections and piping of the housing buildings located in the main area of the estate.**

| <b>Building</b> | <b>Electricity</b>   | <b>Heat</b>  | <b>Water</b>  |
|-----------------|--|--|---|
| Mickiewicza 55  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn100; GPEC | General water pipe wo50,<br>AquaSopot   |
| Mickiewicza 57  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn150; GPEC | General water pipe wo150,<br>AquaSopot  |
| Mickiewicza 59  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn50; GPEC  | General water pipe wo150, water pipe woD150 (D - digitalization and vectorization of the map),<br>AquaSopot |
| Mickiewicza 61  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn50; GPEC  | General water pipe wo150, water pipe woD150,<br>AquaSopot   |
| Mickiewicza 63  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn50; GPEC  | General water pipe wo150,<br>AquaSopot  |
| Żeromskiego 43  | low - voltage single line;<br>Energa Operator                        | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn50; GPEC  | General water pipe wo90,<br>AquaSopot; water pipe wo100nwo100-n   |
| Abrahama 28A    | eNA single line, low-voltage lines:<br>3eNA, 2Na;<br>Energa Operator | heat pipe of high heat parameter cw50; heat pipe of low heat parameter cn65; GPEC  | General water pipe wo50,<br>AquaSopot;  |
| Abrahama 28B    | low-voltage eNA single line;<br>Energa Operator                      | heat pipe of high heat parameter cw50; GPEC  | General water pipe woA100 (A - line position from line detection system),<br>AquaSopot;                     |

### **2.3 Description of the demonstrator building**

For demonstration purposes, one of the 11-storeys buildings was chosen. The scheme of connections to the building is available in Figure 3 with a complementary one with no landscape image in Annex C.



**Figure 3** Connections to the city grid that are available on the demonstrator's site together with entering valves where appropriate<sup>3</sup>; scale 1:250.

The base area of this building is roughly 408 m<sup>2</sup>, estimated with a measuring tool from <https://mapy.geoportal.gov.pl/>, leaving about half of that space available for PV installations on the roof of the building. The building is equipped with a basement level used for storage space for the residents, a common staircase and an elevator. There are 7 flats on each floor, giving 77 flats in the building. Each flat is equipped with separate set of electricity, heat, gas and cold-water meters that are being read by the provider and the payments are calculated from there. Heat is measured by meters from either ISTA or Techem that can be radio-read. Water is read manually for each flat. All readings for particular end-users are sensitive data and thus will not be reported here.

There are some collective gauges that provide readings from the common areas of the buildings, such as staircases, elevators or Administration building that were analysed here. There are separate meters for all the lessees of the business space as well.

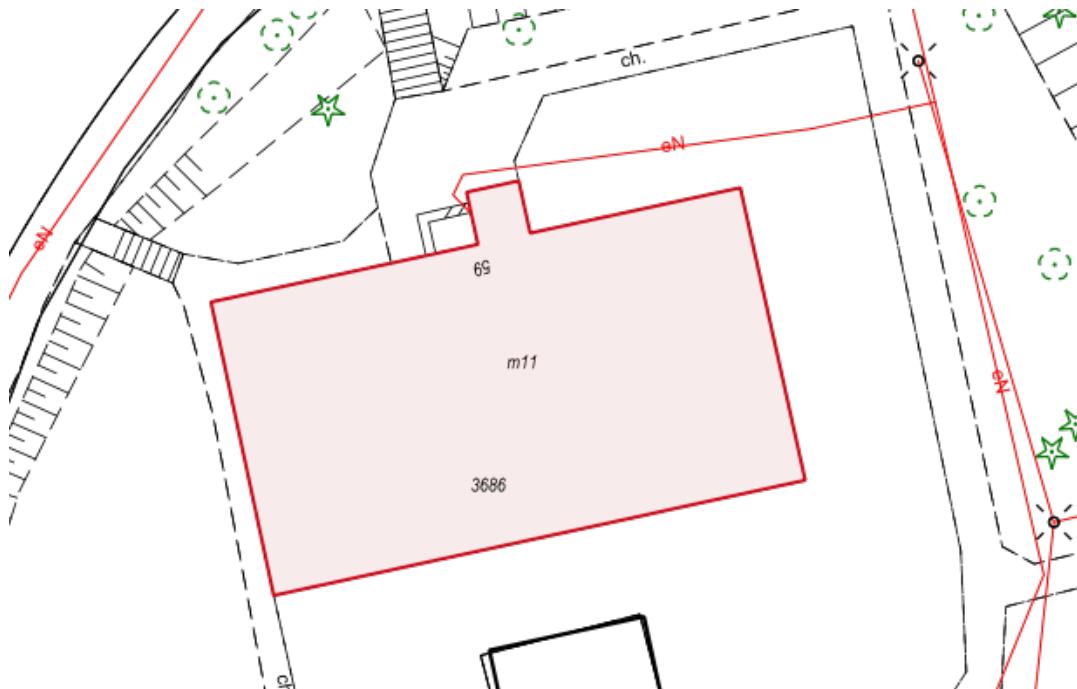
<sup>3</sup> Map taken from [https://mapy.geoportail.gov.pl/imap/Imgp\\_2.html?gpmap=gp0](https://mapy.geoportail.gov.pl/imap/Imgp_2.html?gpmap=gp0); date of access 23.03.2022

### 3 Media availability and consumption at the WSM site

#### 3.1 Electrical energy



**Figure 4** Electric grid on the demonstrator site showing the connection to the neighbouring power station; scale 1 : 500.

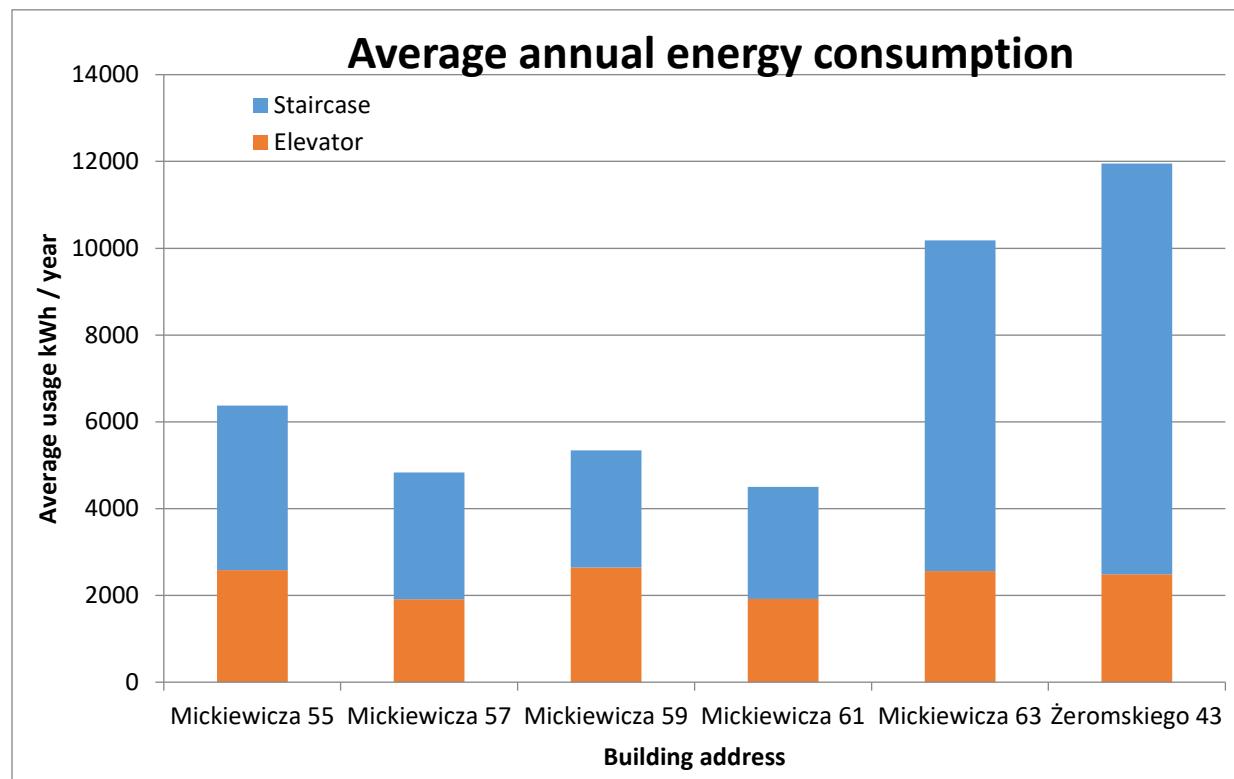


**Figure 5** Closeup of the electrical connection to the demonstrator building; scale 1 : 100.

The electrical grid is shown in Figure 4 together with the transformer station, whereas the close-up of the line entering the demonstrator is shown in Figure 5. Electrical energy usage of 6 similar buildings that are labelled A – F in *Figure 1*, in years 2018-2021 is shown in Figure 6 for the staircases, whereas Figure 7 shows the electricity usage of the elevators that are in each building. Detailed tables with readouts are placed in Annex D. The building for the analysis were chosen based on the type (all being 11-storey accommodation-type ones) and their proximity.

From the stacked area plot of the staircase energy consumption in Figure 6, the alteration of seasons can be clearly seen as the light on the staircases is operated manually. There are also 2 buildings of significantly more pronounced electricity consumption, which are Żeromskiego 43 and Mickiewicza 63. For both, the energy consumption is almost double the value for other four buildings. In all cases there are also dips in the energy usage over the Christmas Holiday season. Many apartments in Sopot are rented by students that leave for holiday season, which might be the case here.

Similar behaviour can be also observed for the energy usage of the elevators in the six buildings of interest. Here, the energy consumption is rather evenly distributed over the buildings. Additionally, since the start of the pandemic period, the reduction in the use of elevators is marked by the drop in the energy usage around March 2020.

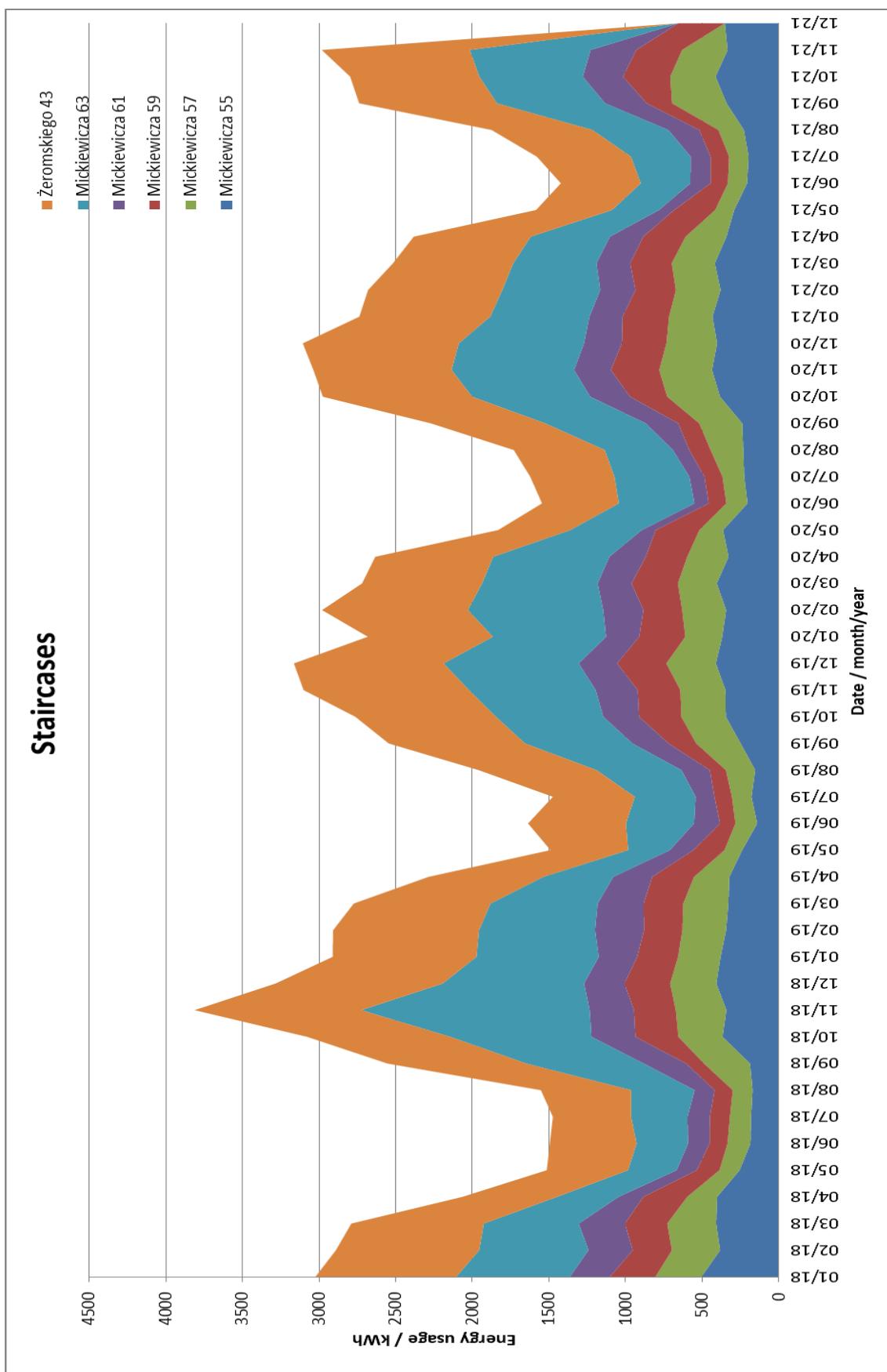


**Figure 6 Average annual energy consumption for all buildings that were analysed over the period 2018-2021.**

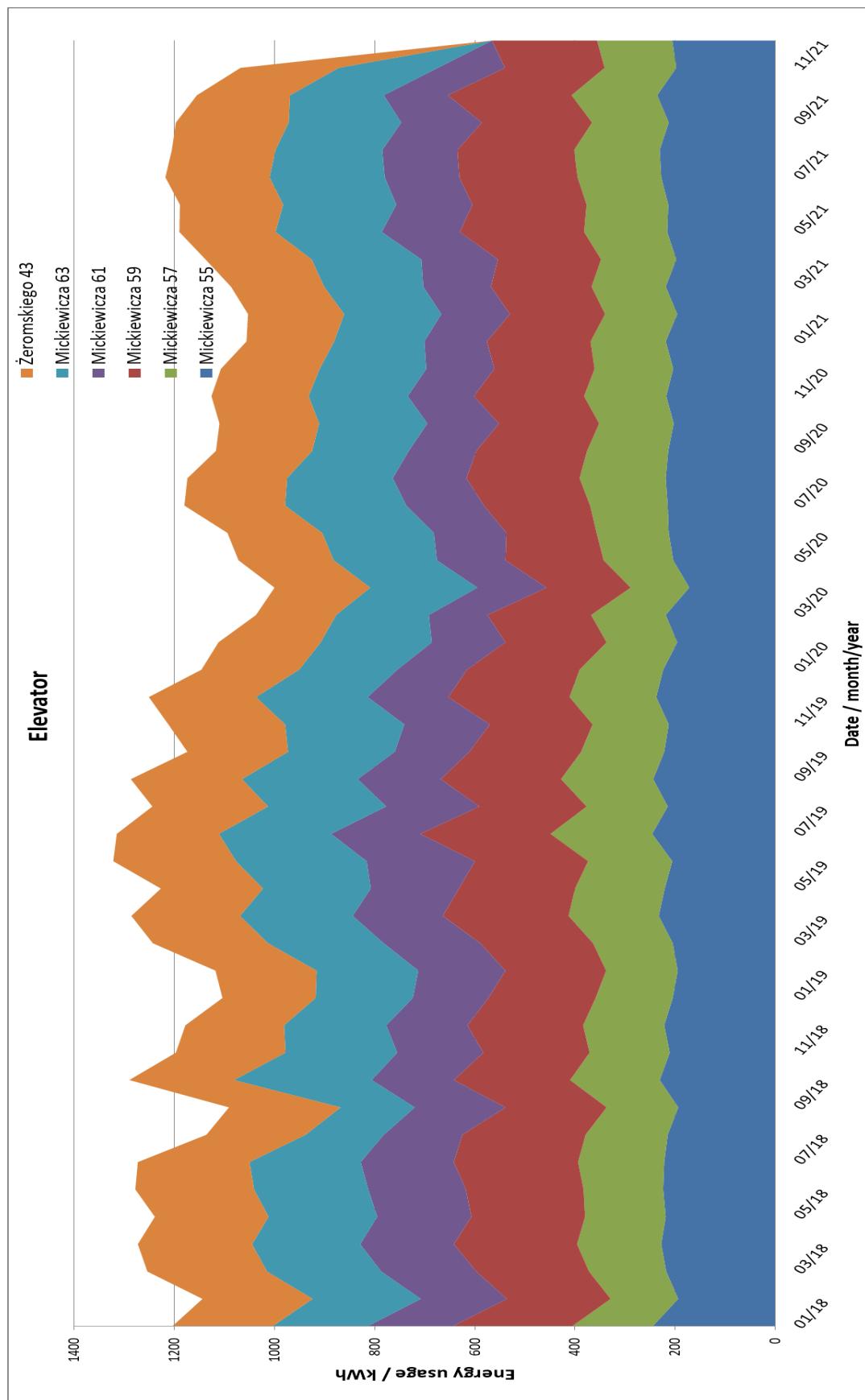
The annual electrical energy consumption per each of reporting years of the demonstrator is shown below in Table 2. The electric energy usage value is stable over the period of analysis.

**Table 2 The annual electrical energy consumption in each of reporting years of the demonstrator in the common areas of the building (staircase and the elevator).**

|                   | 2018 | 2019 | 2020 | 2021 |
|-------------------|------|------|------|------|
| Average use / kWh | 5347 | 5359 | 5228 | 5440 |



**Figure 7 Stacked area plot of energy usage in the buildings A-F of WSM in years 2018-2021 at the staircases;  
Mickiewicza 59 is the demonstrator**



**Figure 8 Stacked area plot of energy usage in the buildings A-F of WSM in years 2018-2021 by the elevators;  
Mickiewicza 59 is the demonstrator**

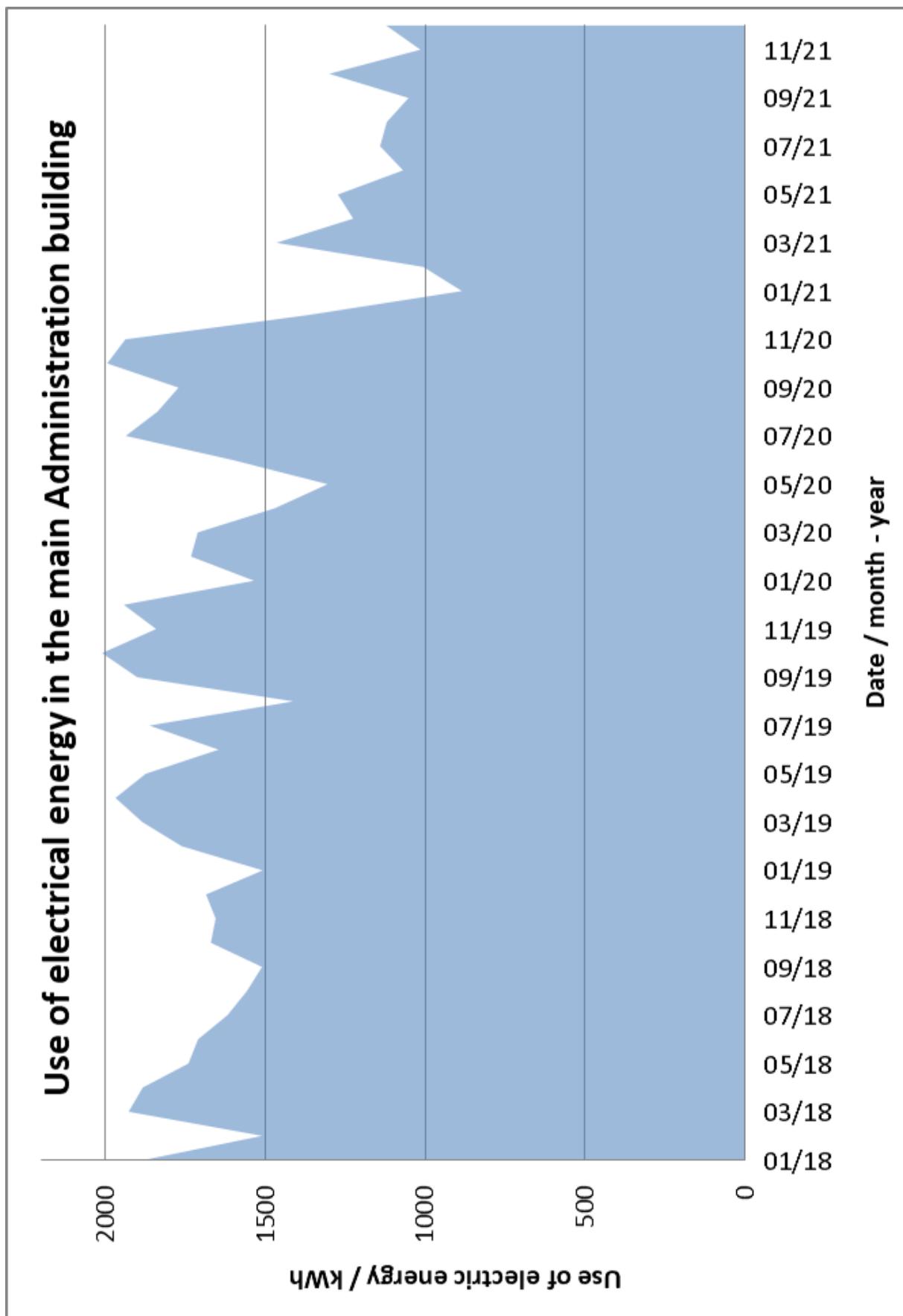
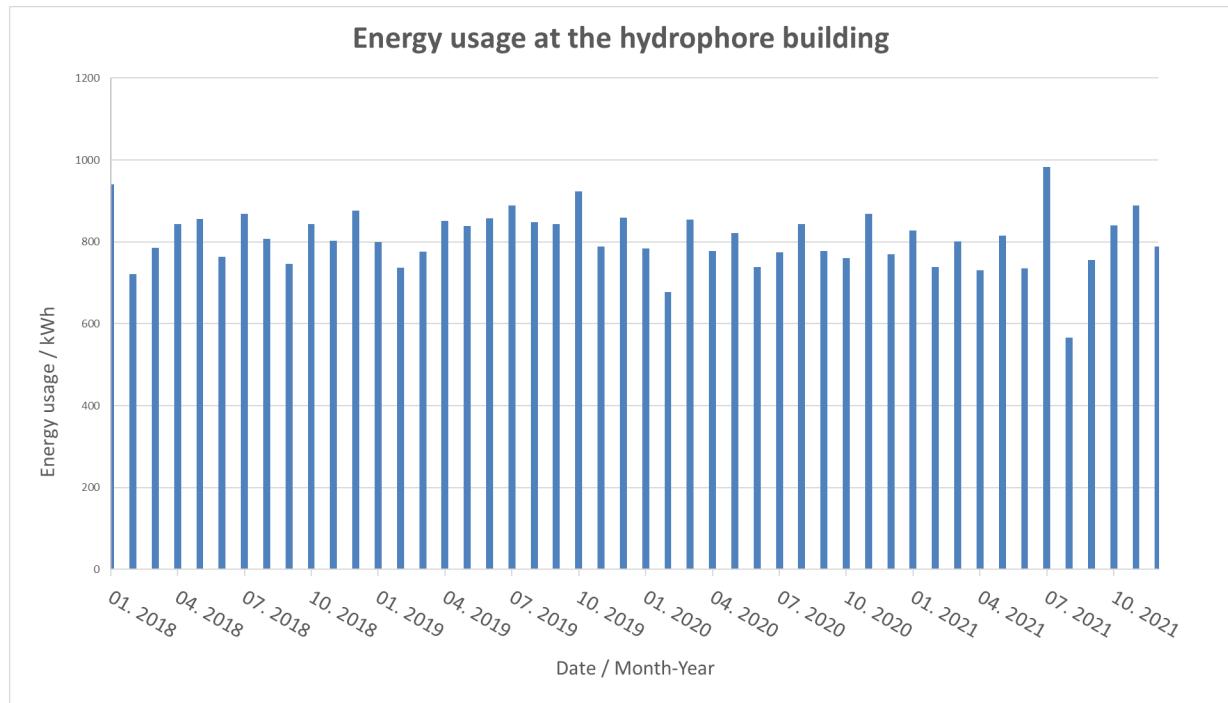


Figure 9 Use of electrical energy in the Administration building, Mickiewicza 54/56, over the years 2018-2021.

For comparison, the administration building was also analysed for the energy usage over the same reporting period 2018-2021 and the data is shown in *Figure 9* and the Annex D. Since 2021 a noticeable decrease of about 20% in energy consumption is observed.

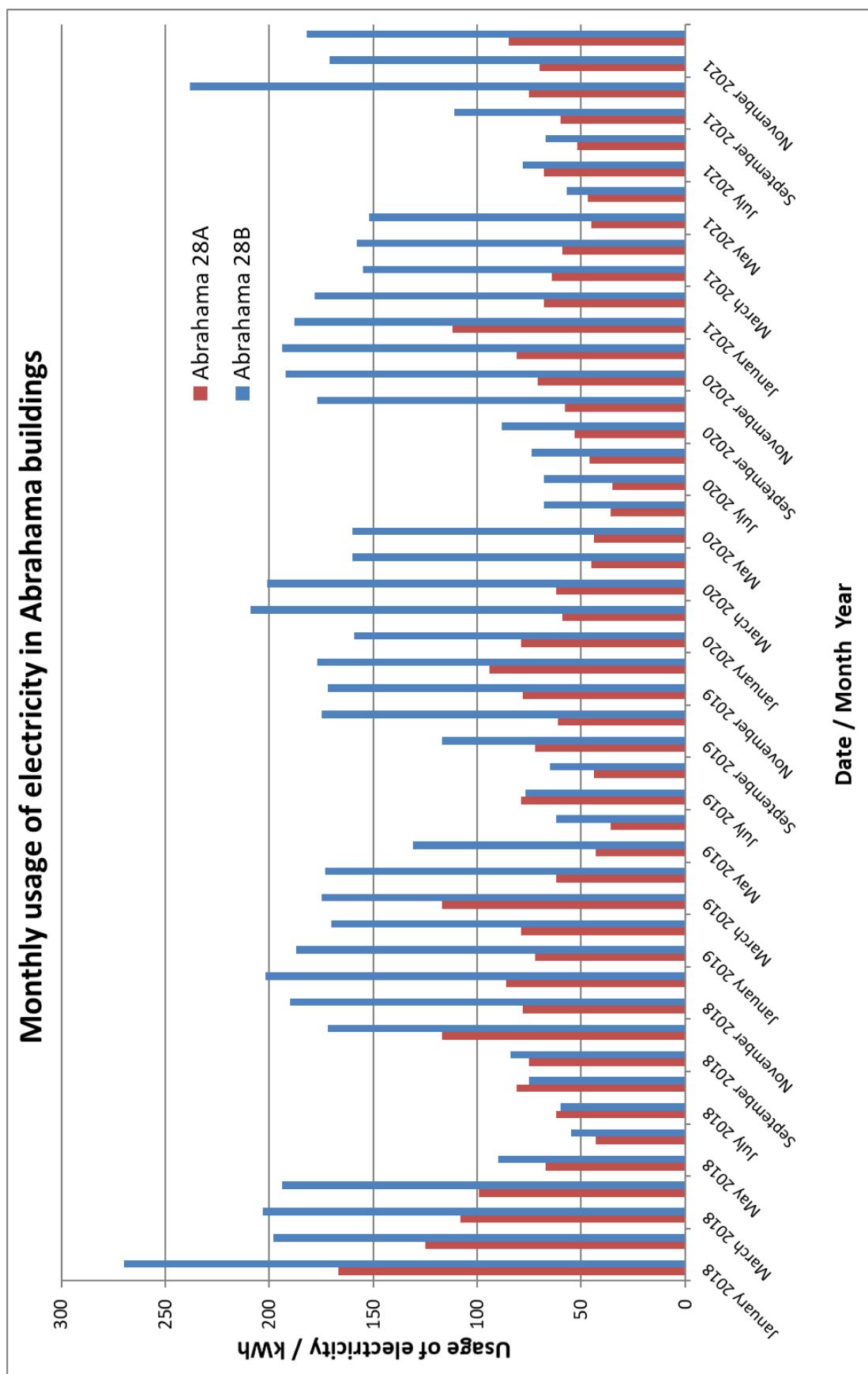
Also, the hydrophore building that is an important part of the infrastructure of WSM was analysed here for the usage of electrical energy. The plot is shown in Figure 10 and the data table with accurate readouts is placed in the Annex D. The average annual consumption for this building equals 9695 kWh.



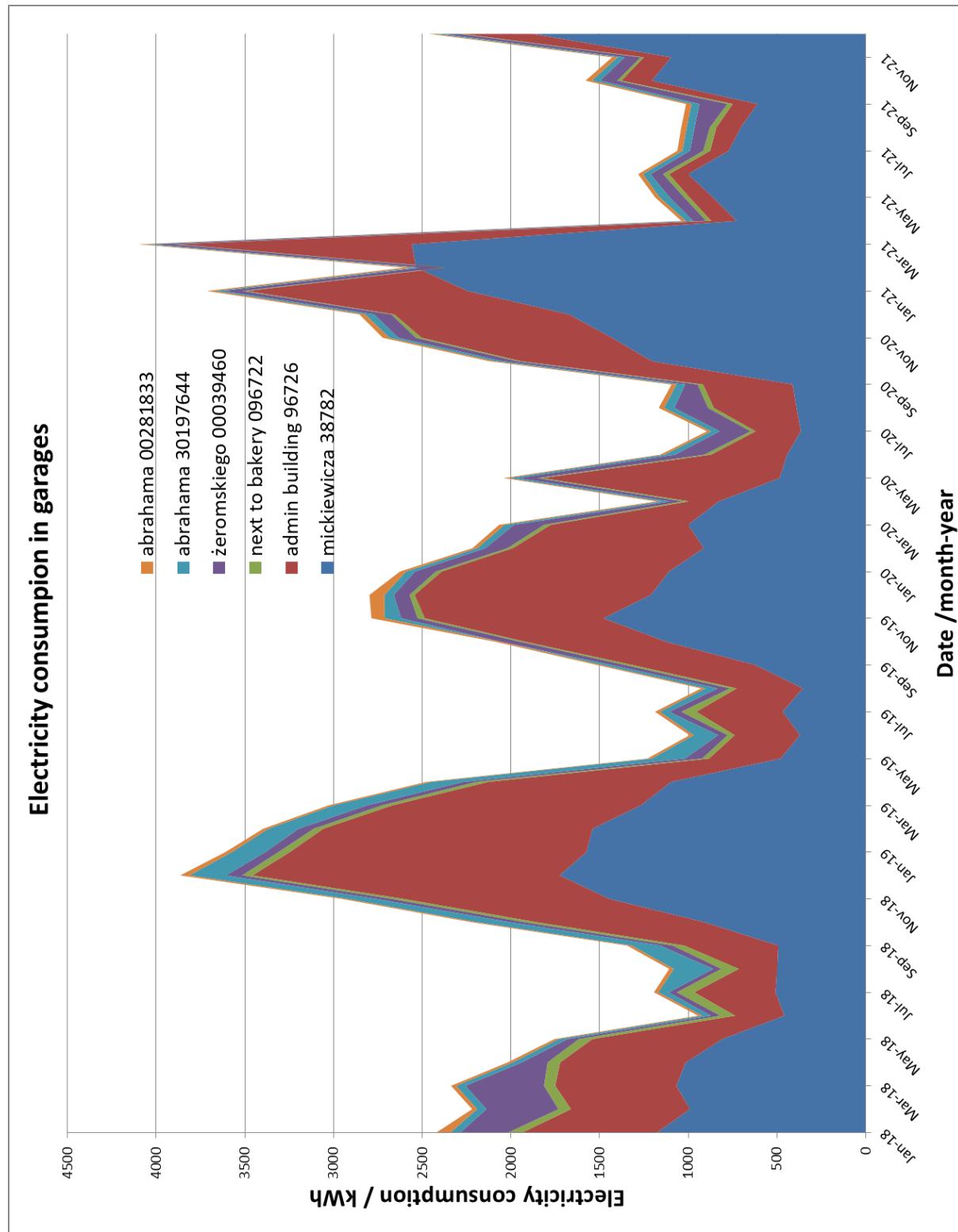
**Figure 10 Usage of electric energy in the hydrophore building for the years 2018-2021.**

In Figure 11, the electric energy consumption in buildings located at Abrahama 28 A and 28B for the period of 2018-2021 is shown (with the readouts tabularised in Annex D). As in the previous case, for the staircases' readouts plotted in *Figure 7*, alternating weather seasons are clearly marked, although they are more pronounced for building 28B.

It was also possible to plot data for the numerous garages that belong to WSM. The buildings that serve garaging purposes are grouped and placed in various parts of the estate. There are six meters that count the electric usage, and they are labelled after the placement of the garaging complexes. There are two large complexes, both located along Mickiewicza street in the neighbourhood of the Administration building. Another four are placed in other locations and do not show equally high energy consumption levels as former. The data was again collected for years 2018-2021. The stacked area plots are shown in Figure 12 with detailed data placed again in Annex D. Like in other cases, the alternating seasons are clearly marked.



**Figure 11 Electrical energy consumption in buildings Abrahama 28A and 28B in the reporting period 2018-2021.**

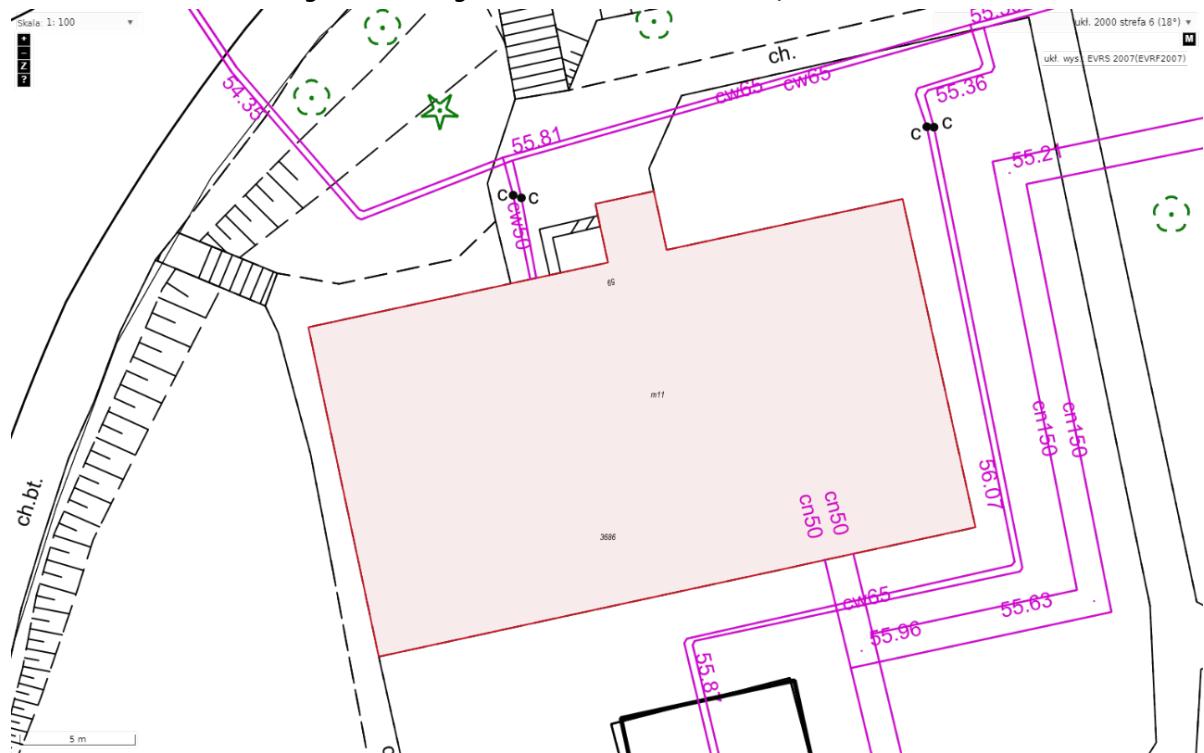


**Figure 12 Stacked area plot of electricity consumption at all the garages for years 2018 – 2021; numbers in the legend are meter ID numbers.**

3.2 Heat



**Figure 13 Heat grid on the demonstrator site; scale 1 : 500**



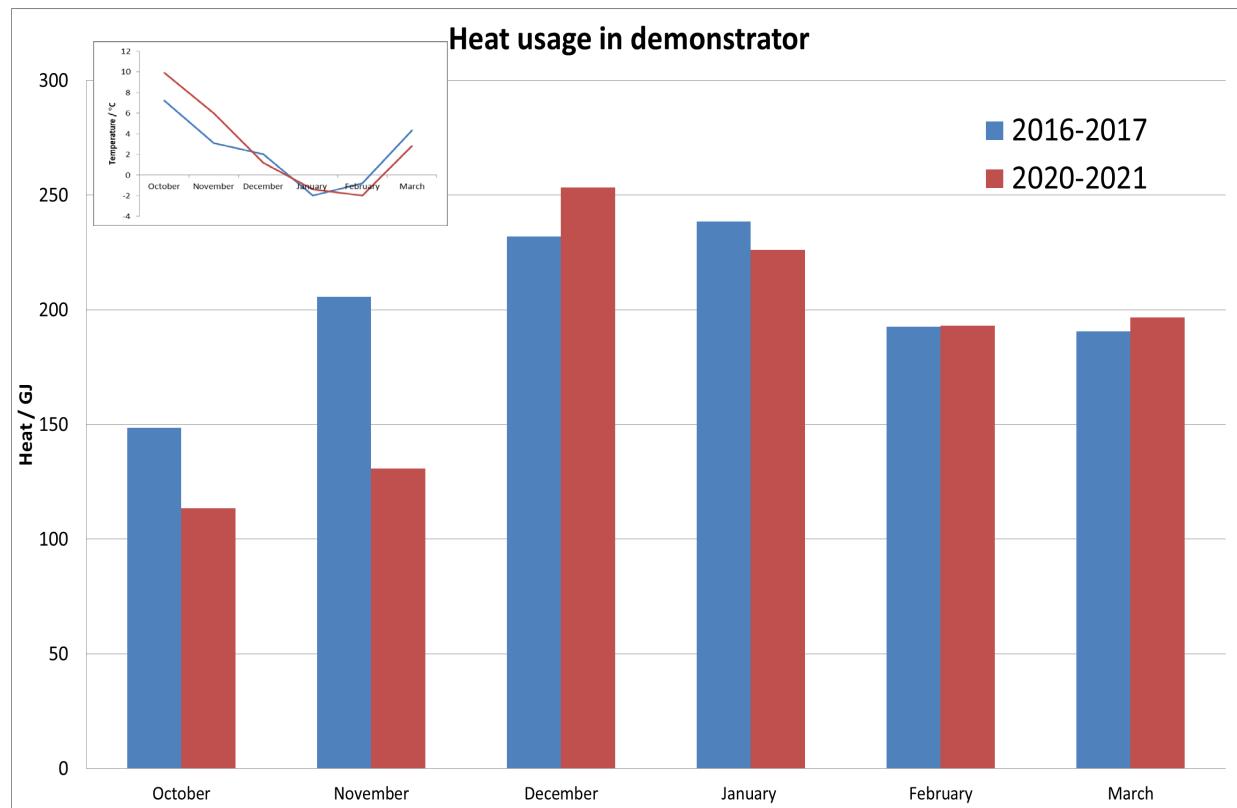
**Figure 14 Closeup of the heat connection to the demonstrator building; scale 1 : 100.**

The outsourced heat grid provided to the Estate is shown in *Figure 10* with the close-up of the connection to the demonstrator depicted in *Figure 11*. It should be noted that the heat grid provides the

hot water for the heating system only, whereas the household hot water is generated through the gas-based system that is described later.

It was possible to analyse the heat consumption of the demonstrator for heating period 2016-2017 and 2020-2021. The importance of the dates is that the elevation of the building has been modernised in the meantime (c.a. 2018) and should improve thermal insulation of the building. The usage of heat over the winter period before and after the renovation is shown in Figure 12. The drop in the heat consumption is more pronounced in the first quarter, whereas in the second quarter the values for both reporting periods are comparable. The data was cross-examined against the average temperatures recorded in Tricity over the reporting periods (data taken for the Airport weather station from <https://www.wunderground.com/history/daily/pl/gda%C5%84sk/EPGD>, shown in the inset). Unfortunately, data correlates inversely with the temperature readouts, hence no significant conclusions on the improvement of the insulation of the demonstrator can be drawn.

The data used to produce this graph, along with data for other buildings and comparison for the heat consumption for small, 5-storey buildings located at Abrahama street can be found in Annex D.



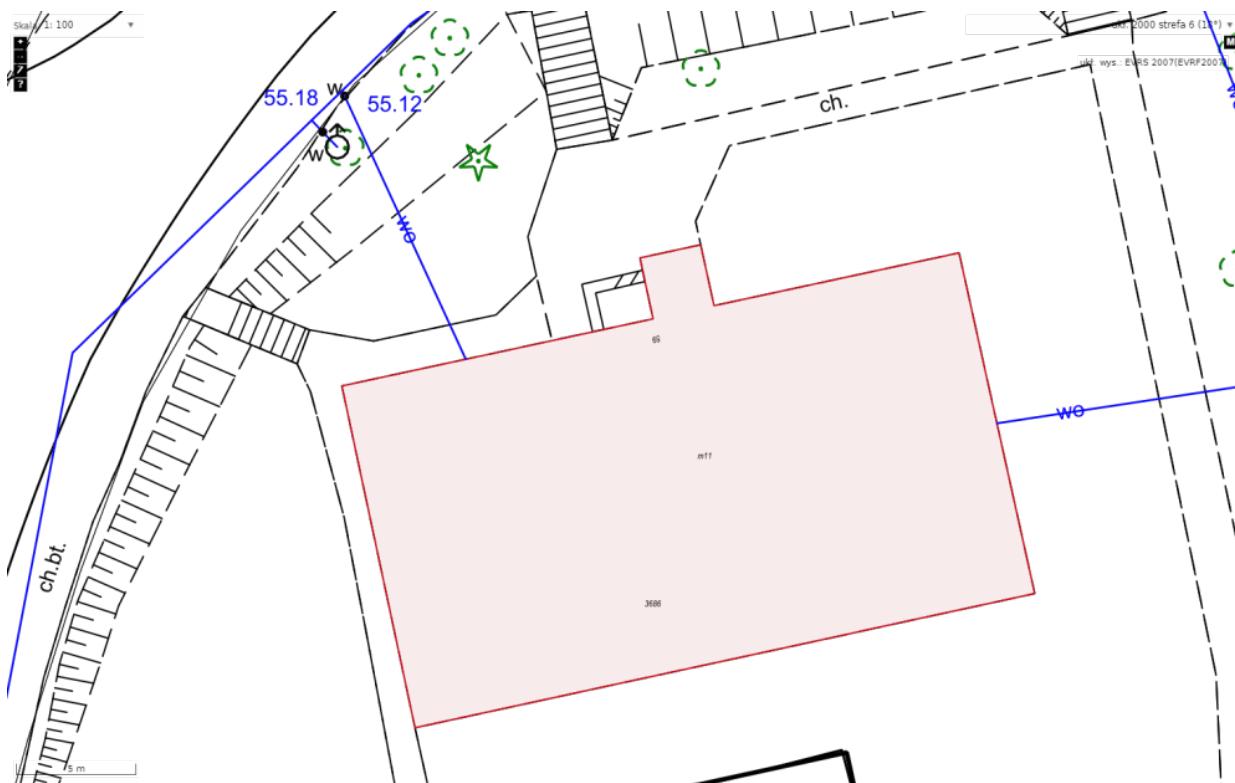
**Figure 15 Heat consumption of the demonstrator for heating period 2016-2017 and 2020-2021, the inset presents the average temperatures recorded in Tricity over the reporting periods <sup>4</sup>**

<sup>4</sup> Values of average monthly temperature readouts for Gdańsk were taken from : <https://www.wunderground.com/history/daily/pl/gda%C5%84sk/EPGD> ; date of access: 17.03.2022

### 3.3 Water



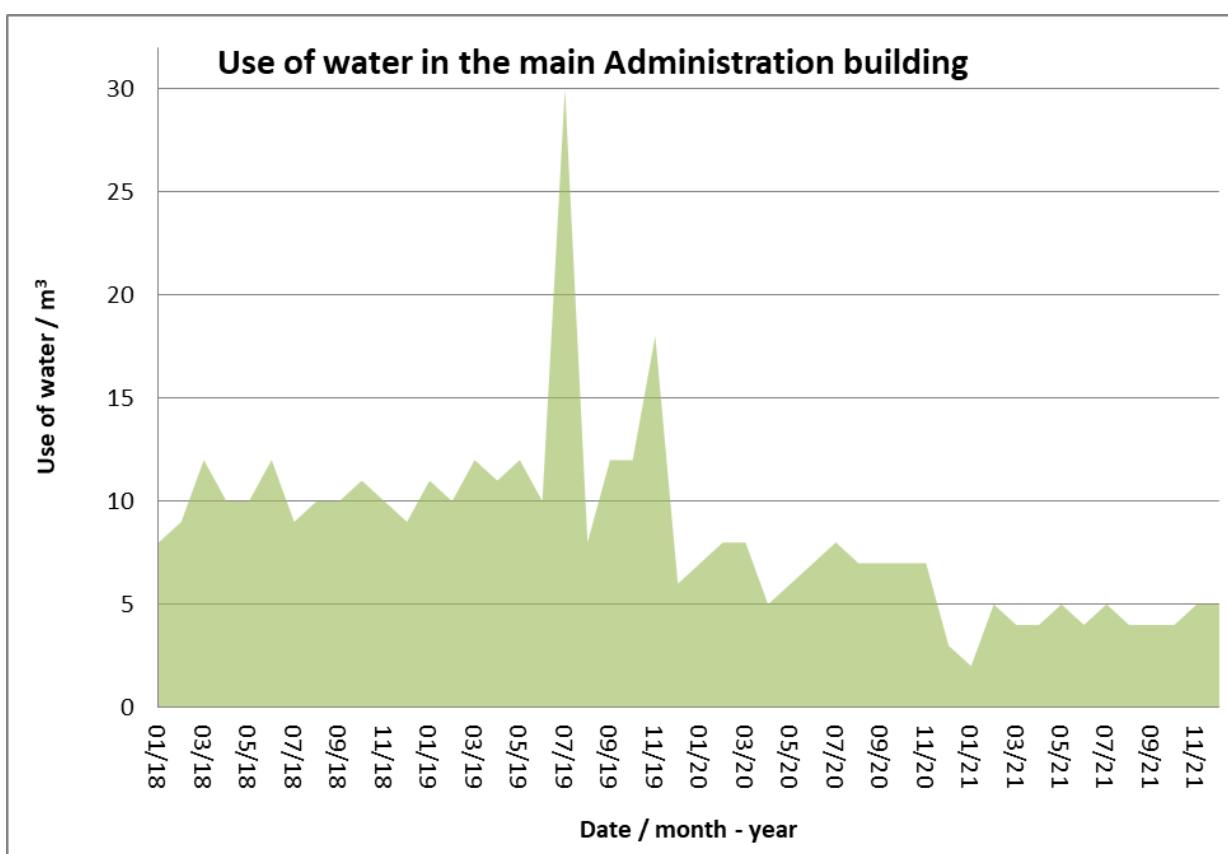
**Figure 16 Water piping over the WSM area, scale 1 : 500**



**Figure 17 Close-up of the water pipes connections to the demonstrator**

As mentioned before, water is supplied by an external provider and is accounted for each household separately. At the main part of WSM, zonal water supply systems are used: the lower zone is up to and including 2<sup>nd</sup> floor and is supplied with water directly from the municipal water supply, and the higher zone is supplied by hydrophore devices (from the local hydrophore through the WSM piping). Each zone has separate horizontal distribution pipelines as well as risers and branches. Currently, Żeromskiego 43 is supplied entirely by hydrophore.

For general information, the water usage in the Administration building over the period of 2018 - 2021 is shown in *Figure 18*. The data for this plot can be found in Annex E, *Table 11*. Apart from the significant increase in the consumption in the second half of 2019, a general decrease in the used water levels is observed for 2021 (50% with respect to 2018). The average monthly consumption of water over years 2018 – 2021 for this building is shown in *Table 3*.

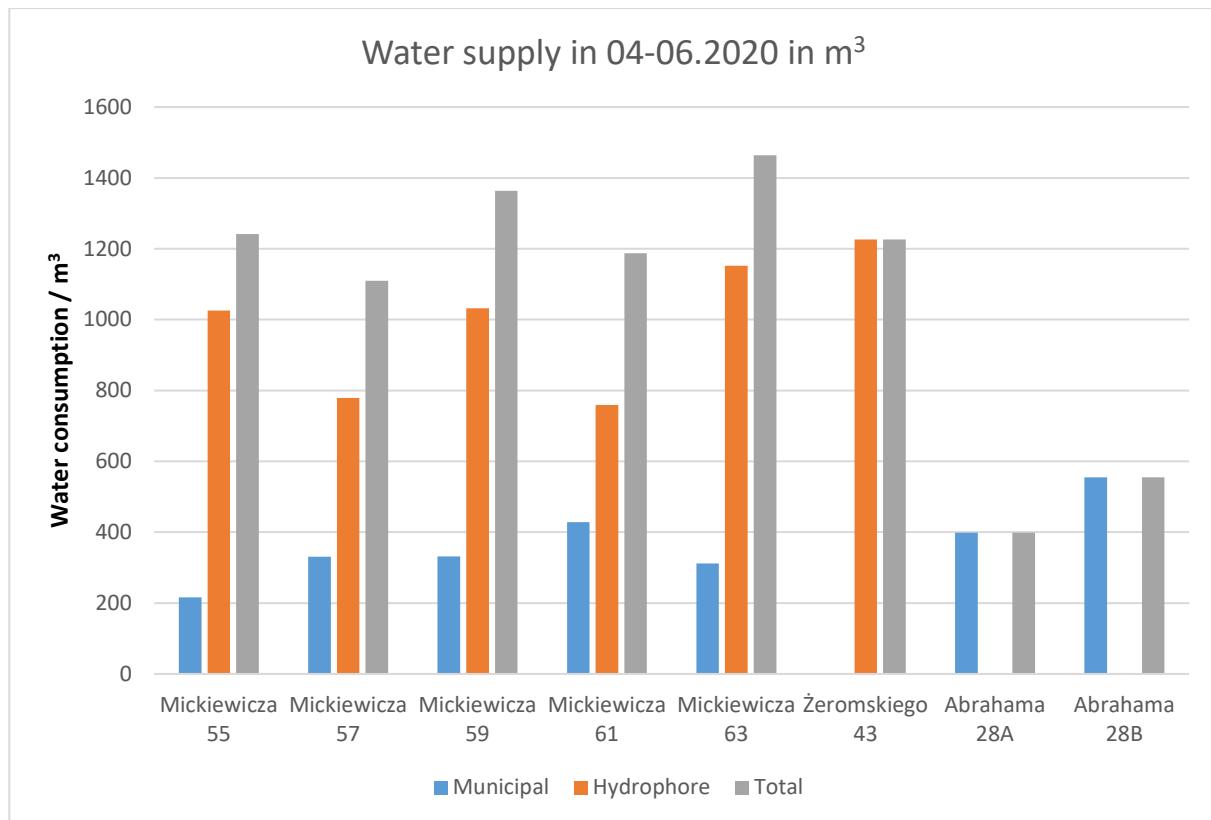


**Figure 18 Water usage in the Administration building over the period of 2018 - 2021**

**Table 3 Average monthly water usage in the Administration building in years 2018 – 2021.**

|                           | 2018 | 2019 | 2020 | 2021 |
|---------------------------|------|------|------|------|
| Ave. Use / m <sup>3</sup> | 10   | 12.7 | 6.7  | 4.25 |

Sample water usage in the residential buildings belonging to the WSM is shown in *Figure 19* for the 2<sup>nd</sup> quarter of 2020. Detailed data can be found in Annex F. Since most the buildings exceed the height served by the city, a clear predominance of the hydrophore supply is shown. Only the smaller buildings at Abrahama street are entirely supplied through the municipal network.



**Figure 19 water consumption in 2<sup>nd</sup> quarter of 2020 in residential buildings of WSM; readouts in m<sup>3</sup>.**

As mentioned before, a hydrophore is a key element of the water distribution system and its crucial role is depicted in *Figure 20*, where comparison of the water consumption at the hydrophore meter and the main water meter of WSM is shown. Again, the detailed readouts are shown in Annex F. It can be clearly seen that about 80% of water that enters the WSM is being delivered through the hydrophore system.

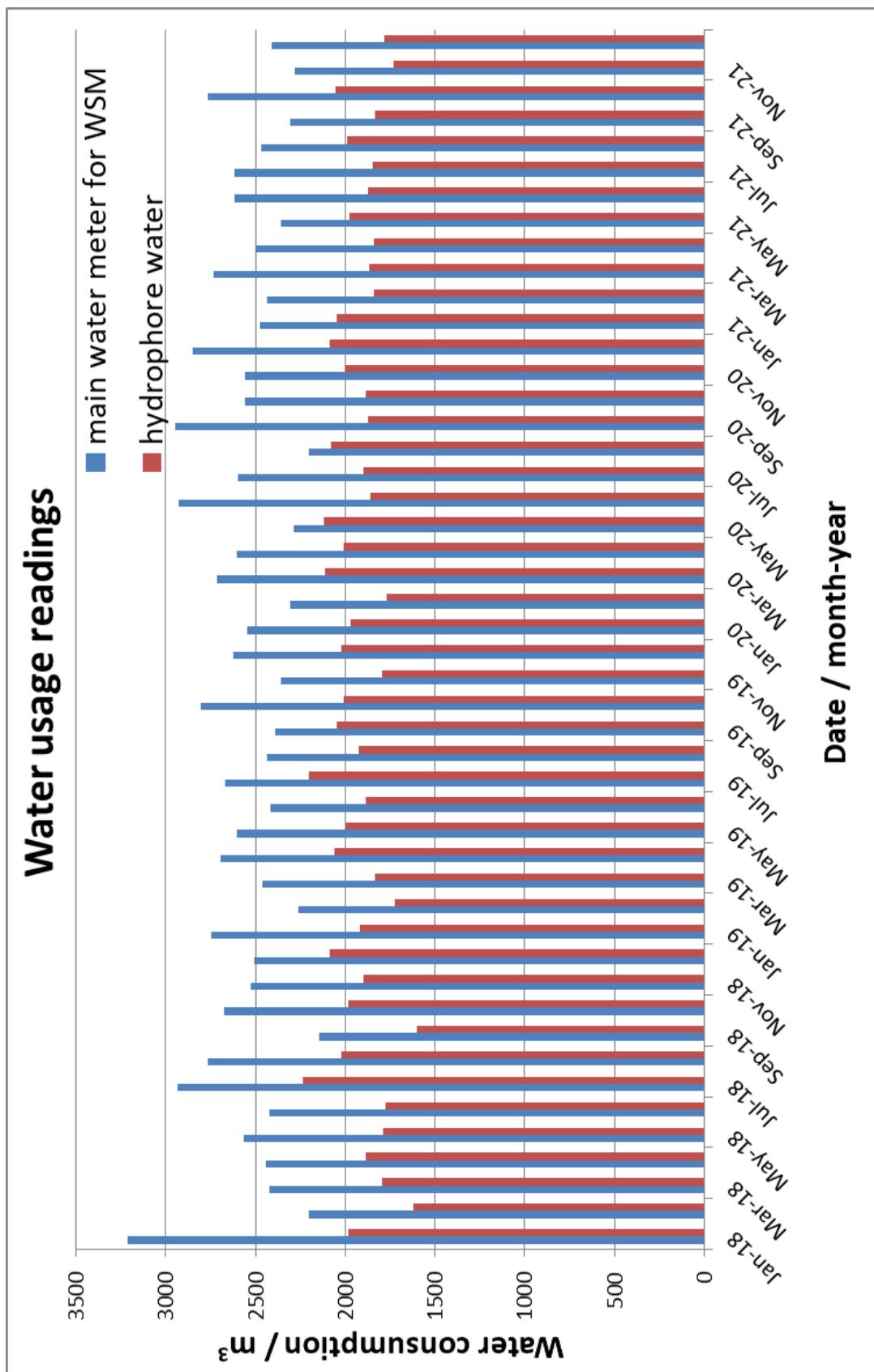


Figure 20 4 Water usage readings at the main meter of WSM and at the hydrophore station.

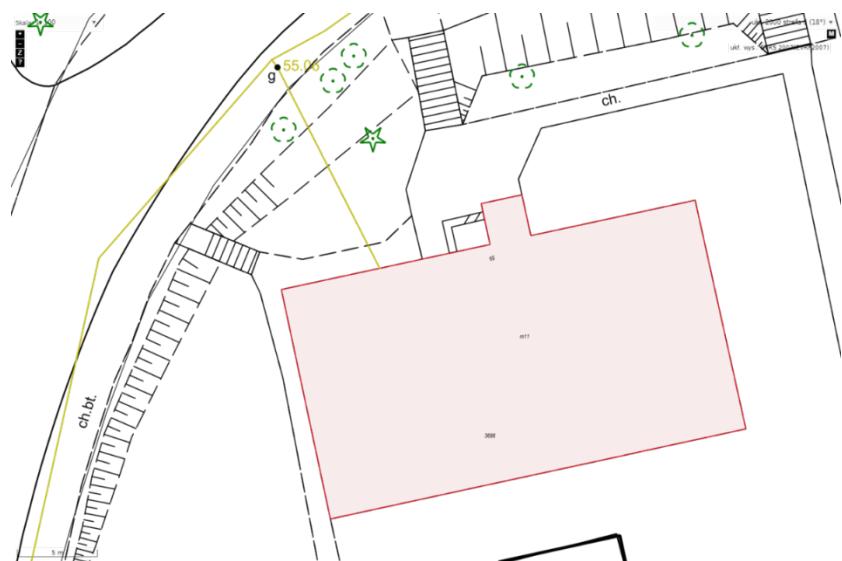
### 3.4 Gas

Gas is provided by PGNIG - Polish Oil Mining and Gas Extraction S.A. company. There is a piping system that distributes the medium to the buildings and then flats within. The installation around WSM is shown in *Figure 21* with close - up to the connection entering the demonstrator in *Figure 22*. Although gas installation is not compulsory and gas meters belong to individuals, all the buildings that are used for accommodation have such installations, since there is no direct supply of hot water. Water for personal and household use is being heated directly in flats with a gas oven, so-called Junkers.

The installation as whole belongs to the gas provider and the end-users, hence no data on gas usage is being collected by WSM. The Administration Building and technical buildings possess no gas access.



**Figure 21 Gas line at WSM; it is outlined in lemon colour; scale 1 : 500**



**Figure 22 Gas line entering the demonstrator; scale 1:100**

## 4 Conclusions and Outlook

The data provided here allows for rough estimates of energy consumption and demands of WSM in terms of supporting its general infrastructure, excluding the individual end-user requirements. The shared areas that were analysed here are staircases and elevators of living buildings, administration building and hydrophore building. There is also data available for the electric energy consumption by the garage users that was presented here and can be used for further analysis.

What is possible to be determined for the demonstrator building, is the average monthly consumption of electric energy in the shared areas being 445 kWh, with 225 kWh being used to operate the elevator and remaining 220 kWh to illuminate the staircase. The average monthly use of water by residents of this building is 370 m<sup>3</sup>, of which 260 m<sup>3</sup> will have to be delivered through the hydrophore system, hence increasing the electrical energy consumption contribution by a respective value. The average monthly heat consumption for this building, only includes the heating of the premises with radiators, over the heating season will vary between 130 – 200 GJ, depending on the severity of winter conditions. The estimates do not include the quantity of heat required to provide hot tap water.

Of high importance is also the electricity consumption by the hydrophore building that is about 700 kWh per month and must be accounted for in analysis of energy consumption by most of the residential buildings. Also, the electrical energy consumption by the Administration building is not negligible at the level of 1200 kWh per month.

## 5 Annex A



**Figure 23** Sewage system scheme at the WSM site in the neighbourhood of the demonstrator



**Figure 24** Telecom system scheme at the WSM site in the neighbourhood of the demonstrator

## 6 Annex B

**Table 4 Sample readouts for all the buildings of the Estate for February 2022.**

| Building       | Resource    | Placement       | Meter redout |     |
|----------------|-------------|-----------------|--------------|-----|
| Mickiewicza 55 | Electricity | Staircase 48887 | 24500        |     |
|                |             | Dźwig 48909     | 18362        |     |
|                |             | Vectra          | 4623         |     |
|                | Heat        | In GJ           |              |     |
|                | Cold water  | Municipal       | 263          | 39  |
|                |             | Hydrophore      |              |     |
| Mickiewicza 57 | Electricity | Staircase 8058  | 19613        |     |
|                |             | Elevator 8055   | 13363        |     |
|                |             | Vectra          | 1885         |     |
|                | Heat        | In GJ           | 905.00       |     |
|                | Cold water  | Municipal       | 256          | 86  |
|                |             | Hydrophore      | 26947        | 316 |
| Mickiewicza 59 | Electricity | Staircase 8701  | 16318        |     |
|                |             | elevator 8643   | 19028        |     |
|                |             | Vectra          | 3929         |     |
|                | Heat        | In GJ           | 933.07       |     |
|                | Cold water  | Municipal       | 256          | 86  |
|                |             | Hydrophore      | 26947        | 316 |
| Mickiewicza 61 | Electricity | Staircase 8995  | 16317        |     |
|                |             | Elevator 8918   | 13701        |     |
|                |             | Vectra          | 3025         |     |
|                | Heat        | In GJ           | 934.22       |     |
|                | Cold water  | Municipal       | 381          | 130 |
|                |             | hydrophore      | 602          | 203 |
| Mickiewicza 63 | Electricity | Staircase 8683  | 5237         |     |
|                |             | Elevator 8785   | 17683        |     |
|                |             | Vectra          | 2521         |     |
|                | Heat        | In GJ           | 982.47       |     |
|                | Cold water  | Municipal       | 289          | 96  |
|                |             | hydrophore      | 834          | 265 |
| Żeromskiego 43 | Electricity | Staircase 9475  | 64889        |     |
|                |             | Elevator 9476   | 17604        |     |
|                |             | Vectra          | 2788         |     |

|  |                    |                                |         |        |
|--|--------------------|--------------------------------|---------|--------|
|  | Heat               | In GJ                          | 930.91  |        |
|  | Cold water         | Municipal                      | 0       |        |
|  |                    | hydrophore                     |         |        |
| Abrahama 28A                                 | Electricity        | Building 8033                  | 7635    |        |
|  |                    | Boiler 410                     | 12391   |        |
|  |                    | Tenant: Albero                 | 183.36  |        |
|  | Heat               | In GJ                          | 581.95  |        |
|  | Cold water         | Municipal                      | 8388    | 139    |
|  |                    | Washroom                       |         |        |
| Abrahama 28B                                 | Electricity        | Building 4890                  |         |        |
|  | Heat               | In GJ                          | 501.70  | 482.64 |
|  | Cold water         | Municipal                      |         |        |
|  |                    | Washroom + garden              |         |        |
| Grottgera 6/8                                | Electricity        | Building 9527                  | 256145  |        |
|  |                    | Extension 1803                 | 254705  |        |
|  |                    | Adrem 5995                     | 48227   |        |
|  |                    | 4274 1 <sup>st</sup> floor     | 25168   |        |
|  |                    | 2 <sup>nd</sup> floor          |         |        |
|  |                    | 3 <sup>rd</sup> floor          | 17955   |        |
|  | Heat and hot water | Building                       | 13431.4 |        |
|  |                    | Extension                      | 3040.2  |        |
|  |                    | Node for heat and hot water-GJ | 4661.80 |        |
|  |                    | Hot water - m <sup>3</sup>     | 2963    |        |
|  | Cold water         | Building                       | 6048    | 356    |
|  |                    | extension                      | 7573    | 3      |
|  |                    | boiler                         | 37872   | 95     |
| Grottgera 8A                                 | Electricity        | boiler 0755                    | 359778  |        |
|  |                    | Social area 9075               | 6477    |        |
|  |                    | Bunker 0114                    | 5128    |        |
|  |                    | outer 3563                     | 889     |        |
|  | Heat and hot water | Node for heat and hot water-GJ | 4622.70 |        |
|  | Cold water         | Hot water - m <sup>3</sup>     | 2963    |        |
| Mickiewicza 54/56<br>Administration building | Electricity        | Building 2164                  | 311656  |        |
|  |                    | Smaile Design                  | 67242   |        |
|  |                    | Elmo EE                        | 1189    |        |
|  | Water              | Building 2164                  | 2210    | 3      |
|  |                    | Smaile Design                  | 172     | 2      |
|  | Heat               | GJ                             | 120.55  |        |
| Mickiewicza 48/50                            | Electricity node   |                                | 1161    |        |

|  |                          |                      |            |                   |
|--|--------------------------|----------------------|------------|-------------------|
|  |                          |                      |            |                   |
|  | Heat                     | GJ                   | 259.12     |                   |
|  |                          | Main meter           | 1270       | 79                |
|  |                          | Mersa                | 11593      | 70                |
|  |                          | Mersa                | 965        | 4                 |
|  |                          | Mersa                | 310        | 3                 |
|  |                          | hairdresser          | 854        | 1                 |
|  |                          | Ene-com              | 851        | 1                 |
|  |                          | Zielone Jabłuszko    | 470        | 2                 |
|  |                          | Main water meter     | 98768      | 2493              |
|  |                          | hydrophore EE 1090   | 20809<br>7 | 10868<br>submeter |
|  |                          | hydrophore water     | 20547<br>8 | 1931              |
|  | Heat                     | GJ                   |            | 153.79            |
|  |                          | OO38782              | 83203      |                   |
|  |                          | OOO38784             | -          |                   |
|  |                          | By admin building    | 49725      |                   |
|  |                          | By bakery            | 4295       |                   |
|  |                          | OOO39460 Żeromskiego | 8542       |                   |
|  |                          | 30197644 Abrahama    | 615        |                   |
|  |                          | OO281833 Abrahama    | 1589       |                   |
|  |                          | Abrahama submeter    | -          |                   |
|  | Mickiewicza 65<br>boiler | Electricity          | 90485      | -                 |

## 7 Annex C

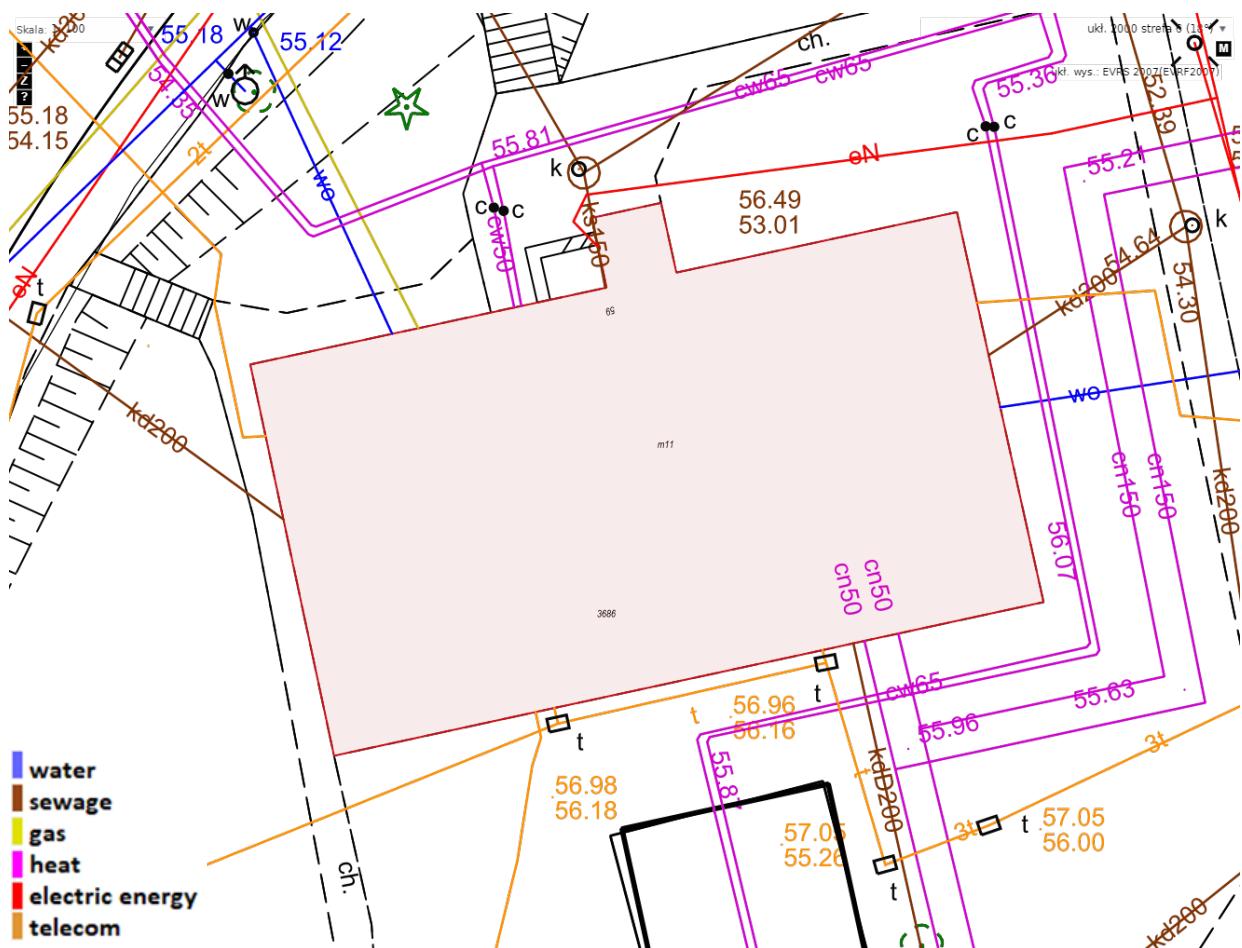


Figure 25 Scheme of connections for the demonstrator building without landscape layer.

## 8 Annex D

Table 5 Electric energy consumption at Mickiewicza 55 over years 2018-2021; numbers denote meter codes

| Readout / kWh |                    |            |                   |            |
|---------------|--------------------|------------|-------------------|------------|
| date          | staircase<br>48887 | difference | elevator<br>48909 | difference |
| 31/12/2017    | 8698               |            | 7614              |            |
| 31/01/2018    | 9205               | 507        | 7859              | 245        |
| 28/02/2018    | 9589               | 384        | 8053              | 194        |
| 31/03/2018    | 9999               | 410        | 8271              | 218        |
| 30/04/2018    | 10403              | 404        | 8499              | 228        |
| 31/05/2018    | 10660              | 257        | 8718              | 219        |
| 30/06/2018    | 10846              | 186        | 8942              | 224        |

|            |       |     |       |     |
|------------|-------|-----|-------|-----|
| 31/07/2018 | 11028 | 182 | 9164  | 222 |
| 31/08/2018 | 11200 | 172 | 9379  | 215 |
| 30/09/2018 | 11389 | 189 | 9573  | 194 |
| 31/10/2018 | 11757 | 368 | 9804  | 231 |
| 30/11/2018 | 12100 | 343 | 10015 | 211 |
| 31/12/2018 | 12509 | 409 | 10237 | 222 |
| 31/01/2019 | 12890 | 381 | 10442 | 205 |
| 28/02/2019 | 13235 | 345 | 10637 | 195 |
| 31/03/2019 | 13565 | 330 | 10842 | 205 |
| 30/04/2019 | 13889 | 324 | 11075 | 233 |
| 31/05/2019 | 14129 | 240 | 11296 | 221 |
| 30/06/2019 | 14271 | 142 | 11502 | 206 |
| 31/07/2019 | 14451 | 180 | 11748 | 246 |
| 31/08/2019 | 14606 | 155 | 11963 | 215 |
| 30/09/2019 | 14856 | 250 | 12207 | 244 |
| 31/10/2019 | 15203 | 347 | 12429 | 222 |
| 30/11/2019 | 15552 | 349 | 12642 | 213 |
| 31/12/2019 | 15964 | 412 | 12880 | 238 |
| 31/01/2020 | 16334 | 370 | 13104 | 224 |
| 28/02/2020 | 16679 | 345 | 13300 | 196 |
| 31/03/2020 | 17085 | 406 | 13519 | 219 |
| 30/04/2020 | 17414 | 329 | 13691 | 172 |
| 31/05/2020 | 17779 | 365 | 13895 | 204 |
| 30/06/2020 | 17984 | 205 | 14108 | 213 |
| 31/07/2020 | 18211 | 227 | 14323 | 215 |
| 31/08/2020 | 18444 | 233 | 14542 | 219 |
| 30/09/2020 | 18684 | 240 | 14756 | 214 |
| 31/10/2020 | 19069 | 385 | 14959 | 203 |
| 30/11/2020 | 19506 | 437 | 15177 | 218 |
| 31/12/2020 | 19910 | 404 | 15381 | 204 |
| 31/01/2021 | 20344 | 434 | 15600 | 219 |
| 28/02/2021 | 20725 | 381 | 15796 | 196 |
| 31/03/2021 | 21144 | 419 | 16015 | 219 |
| 30/04/2021 | 21487 | 343 | 16213 | 198 |
| 31/05/2021 | 21779 | 292 | 16429 | 216 |
| 30/06/2021 | 21987 | 208 | 16643 | 214 |
| 31/07/2021 | 22185 | 198 | 16871 | 228 |
| 31/08/2021 | 22414 | 229 | 17102 | 231 |
| 30/09/2021 | 22756 | 342 | 17315 | 213 |
| 31/10/2021 | 23170 | 414 | 17551 | 236 |
| 30/11/2021 | 23505 | 335 | 17749 | 198 |
| 31/12/2021 | 23859 | 354 | 17955 | 206 |

**Table 6 Electric energy consumption at Mickiewicza 57 over years 2018-2021; numbers denote meter codes**

| date       | Readout in kWh    |                  |                  |            |        |
|------------|-------------------|------------------|------------------|------------|--------|
|            | staircase<br>8058 | difference<br>57 | elevator<br>8055 | difference | vectra |
| 31/12/2017 | 7330              |                  | 5434             |            | 1447   |
| 31/01/2018 | 7668              | 338              | 5595             | 161        | 1469   |
| 28/02/2018 | 7967              | 299              | 5730             | 135        | 1488   |
| 31/03/2018 | 8281              | 314              | 5884             | 154        | 1500   |
| 30/04/2018 | 8600              | 319              | 6052             | 168        | 1500   |
| 31/05/2018 | 8795              | 195              | 6213             | 161        | 1500   |
| 30/06/2018 | 8926              | 131              | 6372             | 159        | 1500   |
| 31/07/2018 | 9075              | 149              | 6544             | 172        | 1500   |
| 31/08/2018 | 9213              | 138              | 6708             | 164        | 1500   |
| 30/09/2018 | 9342              | 129              | 6851             | 143        | 1500   |
| 31/10/2018 | 9642              | 300              | 7030             | 179        | 1500   |
| 30/11/2018 | 9930              | 288              | 7190             | 160        | 1500   |
| 31/12/2018 | 10260             | 330              | 7352             | 162        | 1500   |
| 31/01/2019 | 10561             | 301              | 7506             | 154        | 1500   |
| 28/02/2019 | 10838             | 277              | 7649             | 143        | 1500   |
| 31/03/2019 | 11123             | 285              | 7808             | 159        | 1500   |
| 30/04/2019 | 11417             | 294              | 7988             | 180        | 1518   |
| 31/05/2019 | 11647             | 230              | 8167             | 179        | 1539   |
| 30/06/2019 | 11762             | 115              | 8335             | 168        | 1557   |
| 31/07/2019 | 11904             | 142              | 8538             | 203        | 1579   |
| 31/08/2019 | 12031             | 127              | 8700             | 162        | 1597   |
| 30/09/2019 | 12222             | 191              | 8884             | 184        | 1600   |
| 31/10/2019 | 12512             | 290              | 9050             | 166        | 1600   |
| 30/11/2019 | 12802             | 290              | 9202             | 152        | 1600   |
| 31/12/2019 | 13096             | 294              | 9375             | 173        | 1600   |
| 31/01/2020 | 13419             | 323              | 9542             | 167        | 1633   |
| 28/02/2020 | 13660             | 241              | 9683             | 141        | 1651   |
| 31/03/2020 | 13946             | 286              | 9832             | 149        | 1675   |
| 30/04/2020 | 14199             | 253              | 9949             | 117        | 1699   |
| 31/05/2020 | 14468             | 269              | 10088            | 139        | 1700   |
| 30/06/2020 | 14622             | 154              | 10232            | 144        | 1700   |
| 31/07/2020 | 14760             | 138              | 10387            | 155        | 1700   |
| 31/08/2020 | 14901             | 141              | 10559            | 172        | 1700   |
| 30/09/2020 | 15114             | 213              | 10721            | 162        | 1700   |
| 31/10/2020 | 15394             | 280              | 10870            | 149        | 1700   |
| 30/11/2020 | 15738             | 344              | 11034            | 164        | 1700   |
| 31/12/2020 | 16082             | 344              | 11191            | 157        | 1700   |
| 31/01/2021 | 16412             | 330              | 11341            | 150        | 1700   |
| 28/02/2021 | 16695             | 283              | 11485            | 144        | 1700   |
| 31/03/2021 | 16986             | 291              | 11633            | 148        | 1700   |
| 30/04/2021 | 17267             | 281              | 11783            | 150        | 1707   |

|            |       |     |       |     |      |
|------------|-------|-----|-------|-----|------|
| 31/05/2021 | 17533 | 266 | 11949 | 166 | 1728 |
| 30/06/2021 | 17657 | 124 | 12112 | 163 | 1748 |
| 31/07/2021 | 17782 | 125 | 12279 | 167 | 1768 |
| 31/08/2021 | 17909 | 127 | 12450 | 171 | 1789 |
| 30/09/2021 | 18075 | 166 | 12603 | 153 | 1800 |
| 31/10/2021 | 18430 | 355 | 12774 | 171 | 1800 |
| 30/11/2021 | 18725 | 295 | 12917 | 143 | 1826 |
| 31/12/2021 | 19022 | 297 | 13067 | 150 | 1846 |

**Table 7 Electric energy consumption at Mickiewicza 59 over years 2018-2021; numbers denote meter codes**

| date       | Readout in kWh    |            |                  |            |        |
|------------|-------------------|------------|------------------|------------|--------|
|            | staircase<br>8701 | difference | elevator<br>8643 | difference | vectra |
| 31/12/2017 | 4931              |            | 8053             |            | 2518   |
| 31/01/2018 | 5229              | 298        | 8291             | 238        | 2543   |
| 28/02/2018 | 5485              | 256        | 8498             | 207        | 2564   |
| 31/03/2018 | 5761              | 276        | 8723             | 225        | 2586   |
| 30/04/2018 | 6047              | 286        | 8969             | 246        | 2610   |
| 31/05/2018 | 6195              | 148        | 9196             | 227        | 2633   |
| 30/06/2018 | 6312              | 117        | 9431             | 235        | 2656   |
| 31/07/2018 | 6443              | 131        | 9679             | 248        | 2680   |
| 31/08/2018 | 6562              | 119        | 9925             | 246        | 2703   |
| 30/09/2018 | 6678              | 116        | 10127            | 202        | 2724   |
| 31/10/2018 | 6958              | 280        | 10359            | 232        | 2748   |
| 30/11/2018 | 7231              | 273        | 10571            | 212        | 2770   |
| 31/12/2018 | 7529              | 298        | 10802            | 231        | 2794   |
| 31/01/2019 | 7796              | 267        | 11016            | 214        | 2817   |
| 28/02/2019 | 8046              | 250        | 11217            | 201        | 2838   |
| 31/03/2019 | 8305              | 259        | 11442            | 225        | 2860   |
| 30/04/2019 | 8578              | 273        | 11693            | 251        | 2889   |
| 31/05/2019 | 8781              | 203        | 11925            | 232        | 2919   |
| 30/06/2019 | 8881              | 100        | 12151            | 226        | 2946   |
| 31/07/2019 | 8995              | 114        | 12411            | 260        | 2980   |
| 31/08/2019 | 9100              | 105        | 12625            | 214        | 3009   |
| 30/09/2019 | 9280              | 180        | 12865            | 240        | 3042   |
| 31/10/2019 | 9555              | 275        | 13088            | 223        | 3072   |
| 30/11/2019 | 9834              | 279        | 13293            | 205        | 3102   |
| 31/12/2019 | 10155             | 321        | 13535            | 242        | 3135   |
| 31/01/2020 | 10456             | 301        | 13760            | 225        | 3167   |
| 28/02/2020 | 10709             | 253        | 13962            | 202        | 3194   |
| 31/03/2020 | 11012             | 303        | 14169            | 207        | 3228   |
| 30/04/2020 | 11283             | 271        | 14337            | 168        | 3258   |
| 31/05/2020 | 11568             | 285        | 14533            | 196        | 3290   |
| 30/06/2020 | 11683             | 115        | 14713            | 180        | 3320   |

|            |       |     |       |     |      |
|------------|-------|-----|-------|-----|------|
| 31/07/2020 | 11801 | 118 | 14925 | 212 | 3350 |
| 31/08/2020 | 11940 | 139 | 15151 | 226 | 3382 |
| 30/09/2020 | 12077 | 137 | 15372 | 221 | 3412 |
| 31/10/2020 | 12319 | 242 | 15572 | 200 | 3441 |
| 30/11/2020 | 12635 | 316 | 15792 | 220 | 3473 |
| 31/12/2020 | 12926 | 291 | 15992 | 200 | 3505 |
| 31/01/2021 | 13229 | 303 | 16199 | 207 | 3538 |
| 28/02/2021 | 13493 | 264 | 16389 | 190 | 3566 |
| 31/03/2021 | 13764 | 271 | 16590 | 201 | 3596 |
| 30/04/2021 | 14040 | 276 | 16796 | 206 | 3625 |
| 31/05/2021 | 14307 | 267 | 17044 | 248 | 3657 |
| 30/06/2021 | 14420 | 113 | 17272 | 228 | 3667 |
| 31/07/2021 | 14541 | 121 | 17508 | 236 | 3716 |
| 31/08/2021 | 14666 | 125 | 17741 | 233 | 3748 |
| 30/09/2021 | 14832 | 166 | 17961 | 220 | 3778 |
| 31/10/2021 | 15140 | 308 | 18208 | 247 | 3841 |
| 30/11/2021 | 15439 | 299 | 18407 | 199 | 3839 |
| 31/12/2021 | 15741 | 302 | 18617 | 210 | 3869 |

**Table 8 Electric energy consumption at Mickiewicza 61 over years 2018-2021; numbers denote meter codes**

| date       | Readout inkWh     |            |                  |            |        |
|------------|-------------------|------------|------------------|------------|--------|
|            | staircase<br>8895 | difference | elevator<br>8918 | difference | vectra |
| 31/12/2017 | 5456              |            | 5762             |            | 1995   |
| 31/01/2018 | 5772              | 316        | 5960             | 198        | 20220  |
| 28/02/2018 | 6033              | 261        | 6130             | 170        | 2041   |
| 31/03/2018 | 6322              | 289        | 6302             | 172        | 2063   |
| 30/04/2018 | 6623              | 301        | 6492             | 190        | 2087   |
| 31/05/2018 | 6785              | 162        | 6679             | 187        | 2109   |
| 30/06/2018 | 6917              | 132        | 6867             | 188        | 2131   |
| 31/07/2018 | 7058              | 141        | 7062             | 195        | 2155   |
| 31/08/2018 | 7204              | 146        | 7248             | 186        | 2177   |
| 30/09/2018 | 7334              | 130        | 7405             | 157        | 2196   |
| 31/10/2018 | 7612              | 278        | 7586             | 181        | 2218   |
| 30/11/2018 | 7899              | 287        | 7750             | 164        | 2239   |
| 31/12/2018 | 8188              | 289        | 7922             | 172        | 2260   |
| 31/01/2019 | 8452              | 264        | 8084             | 162        | 2280   |
| 28/02/2019 | 8703              | 251        | 8235             | 151        | 2299   |
| 31/03/2019 | 9023              | 320        | 8409             | 174        | 2319   |
| 30/04/2019 | 9323              | 300        | 8602             | 193        | 2340   |
| 31/05/2019 | 9577              | 254        | 8782             | 180        | 2360   |
| 30/06/2019 | 9731              | 154        | 8958             | 176        | 2379   |
| 31/07/2019 | 9901              | 170        | 9174             | 216        | 2401   |

|            |       |     |       |     |      |
|------------|-------|-----|-------|-----|------|
| 31/08/2019 | 10024 | 123 | 9352  | 178 | 2420 |
| 30/09/2019 | 10209 | 185 | 9538  | 186 | 2442 |
| 31/10/2019 | 10445 | 236 | 9704  | 166 | 2462 |
| 30/11/2019 | 10679 | 234 | 9853  | 149 | 2481 |
| 31/12/2019 | 10953 | 274 | 10024 | 171 | 2502 |
| 31/01/2020 | 11204 | 251 | 10185 | 161 | 2523 |
| 28/02/2020 | 11420 | 216 | 10324 | 139 | 2540 |
| 31/03/2020 | 11683 | 263 | 10471 | 147 | 2562 |
| 30/04/2020 | 11904 | 221 | 10588 | 117 | 2582 |
| 31/05/2020 | 12142 | 238 | 10726 | 138 | 2603 |
| 30/06/2020 | 12233 | 91  | 10863 | 137 | 2622 |
| 31/07/2020 | 12326 | 93  | 11008 | 145 | 2642 |
| 31/08/2020 | 12425 | 99  | 11163 | 155 | 2663 |
| 30/09/2020 | 12532 | 107 | 11310 | 147 | 2683 |
| 31/10/2020 | 12744 | 212 | 11445 | 135 | 2702 |
| 30/11/2020 | 13005 | 261 | 11588 | 143 | 2723 |
| 31/12/2020 | 13245 | 240 | 11720 | 132 | 2744 |
| 31/01/2021 | 13492 | 247 | 11856 | 136 | 2765 |
| 28/02/2021 | 13709 | 217 | 11981 | 125 | 2784 |
| 31/03/2021 | 13939 | 230 | 12118 | 137 | 2803 |
| 30/04/2021 | 14159 | 220 | 12253 | 135 | 2823 |
| 31/05/2021 | 14377 | 218 | 12406 | 153 | 2844 |
| 30/06/2021 | 14477 | 100 | 12562 | 156 | 2863 |
| 31/07/2021 | 14609 | 132 | 12714 | 152 | 2883 |
| 31/08/2021 | 14739 | 130 | 12863 | 149 | 2905 |
| 30/09/2021 | 14941 | 202 | 13013 | 150 | 2925 |
| 31/10/2021 | 15213 | 272 | 13174 | 161 | 2947 |
| 30/11/2021 | 15476 | 263 | 13302 | 128 | 2965 |
| 31/12/2021 | 15774 | 298 | 13436 | 134 | 2985 |

**Table 9 Electric energy consumption at Mickiewicza 63 over years 2018-2021; numbers denote meter codes**

| date       | Readout in kWh    |            |                  |            |        |
|------------|-------------------|------------|------------------|------------|--------|
|            | staircase<br>8683 | difference | elevator<br>8785 | difference | vectra |
| 31/12/2017 | 20502             |            | 7067             |            | 1592   |
| 31/01/2018 | 21383             | 881        | 7283             | 216        | 1610   |
| 28/02/2018 | 22125             | 742        | 7473             | 190        | 1630   |
| 31/03/2018 | 22838             | 713        | 7689             | 216        | 1649   |
| 30/04/2018 | 23458             | 620        | 7917             | 228        | 1669   |
| 31/05/2018 | 23860             | 402        | 8133             | 216        | 1688   |
| 30/06/2018 | 24177             | 317        | 8350             | 217        | 1706   |
| 31/07/2018 | 24513             | 336        | 8578             | 228        | 1726   |
| 31/08/2018 | 24881             | 368        | 8800             | 222        | 1745   |

|            |       |      |       |     |      |
|------------|-------|------|-------|-----|------|
| 30/09/2018 | 25295 | 414  | 8956  | 156 | 1762 |
| 31/10/2018 | 26061 | 766  | 9104  | 148 | 1783 |
| 30/11/2018 | 26982 | 921  | 9379  | 275 | 1803 |
| 31/12/2018 | 28472 | 1490 | 9602  | 223 | 1821 |
| 31/01/2019 | 29394 | 922  | 9806  | 204 | 1840 |
| 28/02/2019 | 30192 | 798  | 10000 | 194 | 1858 |
| 31/03/2019 | 30949 | 757  | 10203 | 203 | 1876 |
| 30/04/2019 | 31648 | 699  | 10434 | 231 | 1896 |
| 31/05/2019 | 32104 | 456  | 10659 | 225 | 1916 |
| 30/06/2019 | 32376 | 272  | 10874 | 215 | 1933 |
| 31/07/2019 | 32820 | 444  | 11135 | 261 | 1950 |
| 31/08/2019 | 33217 | 397  | 11359 | 224 | 1972 |
| 30/09/2019 | 33771 | 554  | 11595 | 236 | 1992 |
| 31/10/2019 | 34472 | 701  | 11826 | 231 | 2011 |
| 30/11/2019 | 35173 | 701  | 12039 | 213 | 2029 |
| 31/12/2019 | 36000 | 827  | 12277 | 238 | 2049 |
| 31/01/2020 | 36881 | 881  | 12500 | 223 | 2067 |
| 28/02/2020 | 37620 | 739  | 12696 | 196 | 2081 |
| 31/03/2020 | 38503 | 883  | 12918 | 222 | 2101 |
| 30/04/2020 | 39257 | 754  | 13103 | 185 | 2122 |
| 31/05/2020 | 40015 | 758  | 13317 | 214 | 2138 |
| 30/06/2020 | 40482 | 467  | 13523 | 206 | 2156 |
| 31/07/2020 | 40976 | 494  | 13746 | 223 | 2174 |
| 31/08/2020 | 41465 | 489  | 13988 | 242 | 2192 |
| 30/09/2020 | 41910 | 445  | 14199 | 211 | 2211 |
| 31/10/2020 | 42566 | 656  | 14392 | 193 | 2228 |
| 30/11/2020 | 43336 | 770  | 14608 | 216 | 2247 |
| 31/12/2020 | 44135 | 799  | 14806 | 198 | 2266 |
| 31/01/2021 | 44952 | 817  | 15019 | 213 | 2285 |
| 28/02/2021 | 45599 | 647  | 15199 | 180 | 2302 |
| 31/03/2021 | 46238 | 639  | 15393 | 194 | 2320 |
| 30/04/2021 | 46781 | 543  | 15591 | 198 | 2338 |
| 31/05/2021 | 47298 | 517  | 15810 | 219 | 2357 |
| 30/06/2021 | 47604 | 306  | 16022 | 212 | 2375 |
| 31/07/2021 | 47928 | 324  | 16248 | 226 | 2393 |
| 31/08/2021 | 48318 | 390  | 16478 | 230 | 2412 |
| 30/09/2021 | 48813 | 495  | 16691 | 213 | 2430 |
| 31/10/2021 | 49519 | 706  | 16916 | 225 | 2449 |
| 30/11/2021 | 50194 | 675  | 17103 | 187 | 2467 |
| 31/12/2021 | 50983 | 789  | 17301 | 198 | 2484 |

**Table 10 Electric energy consumption at Żerommskiego 43 over years 2018-2021; numbers denote meter codes**

| date       | Żerommskiego 43   |            |                  |            |        |
|------------|-------------------|------------|------------------|------------|--------|
|            | staircase<br>9475 | difference | elevator<br>9476 | difference | vectra |
| 31/12/2017 | 25209             |            | 7270             |            | 1765   |
| 31/01/2018 | 26340             | 1131       | 7507             | 237        | 1787   |
| 28/02/2018 | 27258             | 918        | 7707             | 200        | 1806   |
| 31/03/2018 | 28193             | 935        | 7927             | 220        | 1826   |
| 30/04/2018 | 29057             | 864        | 8166             | 239        | 1847   |
| 31/05/2018 | 29674             | 617        | 8394             | 228        | 1867   |
| 30/06/2018 | 30204             | 530        | 8621             | 227        | 1887   |
| 31/07/2018 | 30770             | 566        | 8858             | 237        | 1908   |
| 31/08/2018 | 31280             | 510        | 9081             | 223        | 1929   |
| 30/09/2018 | 31869             | 589        | 9279             | 198        | 1948   |
| 31/10/2018 | 32775             | 906        | 9502             | 223        | 1970   |
| 30/11/2018 | 33709             | 934        | 9711             | 209        | 1990   |
| 31/12/2018 | 34797             | 1088       | 9930             | 219        | 2012   |
| 31/01/2019 | 35887             | 1090       | 10127            | 197        | 2032   |
| 28/02/2019 | 36825             | 938        | 10313            | 186        | 2050   |
| 31/03/2019 | 37777             | 952        | 10515            | 202        | 2069   |
| 30/04/2019 | 38669             | 892        | 10745            | 230        | 2091   |
| 31/05/2019 | 39418             | 749        | 10962            | 217        | 2112   |
| 30/06/2019 | 39925             | 507        | 11166            | 204        | 2131   |
| 31/07/2019 | 40564             | 639        | 11411            | 245        | 2154   |
| 31/08/2019 | 41098             | 534        | 11615            | 204        | 2173   |
| 30/09/2019 | 41867             | 769        | 11846            | 231        | 2195   |
| 31/10/2019 | 42756             | 889        | 12068            | 222        | 2215   |
| 30/11/2019 | 43673             | 917        | 12269            | 201        | 2235   |
| 31/12/2019 | 44752             | 1079       | 12502            | 233        | 2257   |
| 31/01/2020 | 45729             | 977        | 12716            | 214        | 2278   |
| 28/02/2020 | 46545             | 816        | 12911            | 195        | 2296   |
| 31/03/2020 | 47496             | 951        | 13115            | 204        | 2318   |
| 30/04/2020 | 48279             | 783        | 13275            | 160        | 2339   |
| 31/05/2020 | 49048             | 769        | 13466            | 191        | 2360   |
| 30/06/2020 | 49518             | 470        | 13656            | 190        | 2379   |
| 31/07/2020 | 50019             | 501        | 13845            | 189        | 2398   |
| 31/08/2020 | 50568             | 549        | 14046            | 201        | 2421   |
| 30/09/2020 | 51161             | 593        | 14245            | 199        | 2441   |
| 31/10/2020 | 51907             | 746        | 14437            | 192        | 2461   |
| 30/11/2020 | 52881             | 974        | 14636            | 199        | 2482   |
| 31/12/2020 | 53783             | 902        | 14830            | 194        | 2504   |
| 31/01/2021 | 54801             | 1018       | 15027            | 197        | 2525   |
| 28/02/2021 | 55655             | 854        | 15202            | 175        | 2544   |
| 31/03/2021 | 56531             | 876        | 15394            | 192        | 2564   |
| 30/04/2021 | 57316             | 785        | 15580            | 186        | 2583   |

|            |       |     |       |     |      |
|------------|-------|-----|-------|-----|------|
| 31/05/2021 | 58079 | 763 | 15792 | 212 | 2604 |
| 30/06/2021 | 58575 | 496 | 15984 | 192 | 2623 |
| 31/07/2021 | 59096 | 521 | 16190 | 206 | 2645 |
| 31/08/2021 | 59710 | 614 | 16398 | 208 | 2667 |
| 30/09/2021 | 60368 | 658 | 16605 | 207 | 2688 |
| 31/10/2021 | 61266 | 898 | 16830 | 225 | 2709 |
| 30/11/2021 | 62109 | 843 | 17016 | 186 | 2729 |
| 31/12/2021 | 63074 | 965 | 17212 | 196 | 2748 |

**Table 11 Electric energy and water consumption at Mickiewicza 54/56 (Administration building) over years 2018-2021; numbers denote meter codes**

| month  | date       | electricity / kWh 2164 | difference | Water / m <sup>3</sup> | difference |
|--------|------------|------------------------|------------|------------------------|------------|
|        | 31/12/2017 | 233791                 |            | 1802                   |            |
| Jan-18 | 31/01/2018 | 235671                 | 1880       | 1810                   | 8          |
| Feb-18 | 28/02/2018 | 237180                 | 1509       | 1819                   | 9          |
| Mar-18 | 31/03/2018 | 239107                 | 1927       | 1831                   | 12         |
| Apr-18 | 30/04/2018 | 240990                 | 1883       | 1841                   | 10         |
| May-18 | 31/05/2018 | 242730                 | 1740       | 1851                   | 10         |
| Jun-18 | 30/06/2018 | 244440                 | 1710       | 1863                   | 12         |
| Jul-18 | 31/07/2018 | 246058                 | 1618       | 1872                   | 9          |
| Aug-18 | 31/08/2018 | 247615                 | 1557       | 1882                   | 10         |
| Sep-18 | 30/09/2018 | 249125                 | 1510       | 1892                   | 10         |
| Oct-18 | 31/10/2018 | 250795                 | 1670       | 1903                   | 11         |
| Nov-18 | 30/11/2018 | 252450                 | 1655       | 1913                   | 10         |
| Dec-18 | 31/12/2018 | 254135                 | 1685       | 1922                   | 9          |
| Jan-19 | 31/01/2019 | 255643                 | 1508       | 1933                   | 11         |
| Feb-19 | 28/02/2019 | 257404                 | 1761       | 1943                   | 10         |
| Mar-19 | 31/03/2019 | 259288                 | 1884       | 1955                   | 12         |
| Apr-19 | 30/04/2019 | 261256                 | 1968       | 1966                   | 11         |
| May-19 | 31/05/2019 | 263130                 | 1874       | 1978                   | 12         |
| Jun-19 | 30/06/2019 | 264776                 | 1646       | 1988                   | 10         |
| Jul-19 | 31/07/2019 | 266638                 | 1862       | 2018                   | 30         |
| Aug-19 | 31/08/2019 | 268050                 | 1412       | 2026                   | 8          |
| Sep-19 | 30/09/2019 | 269950                 | 1900       | 2038                   | 12         |
| Oct-19 | 31/10/2019 | 271960                 | 2010       | 2050                   | 12         |
| Nov-19 | 30/11/2019 | 273801                 | 1841       | 2068                   | 18         |
| Dec-19 | 31/12/2019 | 275743                 | 1942       | 2074                   | 6          |
| Jan-20 | 31/01/2020 | 277278                 | 1535       | 2081                   | 7          |
| Feb-20 | 28/02/2020 | 279010                 | 1732       | 2089                   | 8          |
| Mar-20 | 31/03/2020 | 280721                 | 1711       | 2097                   | 8          |
| Apr-20 | 30/04/2020 | 282191                 | 1470       | 2102                   | 5          |
| May-20 | 31/05/2020 | 283496                 | 1305       | 2108                   | 6          |
| Jun-20 | 30/06/2020 | 285098                 | 1602       | 2115                   | 7          |

|        |            |        |      |      |   |
|--------|------------|--------|------|------|---|
| Jul-20 | 31/07/2020 | 287034 | 1936 | 2123 | 8 |
| Aug-20 | 31/08/2020 | 288871 | 1837 | 2130 | 7 |
| Sep-20 | 30/09/2020 | 290642 | 1771 | 2137 | 7 |
| Oct-20 | 31/10/2020 | 292636 | 1994 | 2144 | 7 |
| Nov-20 | 30/11/2020 | 294573 | 1937 | 2151 | 7 |
| Dec-20 | 31/12/2020 | 295941 | 1368 | 2154 | 3 |
| Jan-21 | 31/01/2021 | 296826 | 885  | 2156 | 2 |
| Feb-21 | 28/02/2021 | 297832 | 1006 | 2161 | 5 |
| Mar-21 | 31/03/2021 | 299297 | 1465 | 2165 | 4 |
| Apr-21 | 30/04/2021 | 300522 | 1225 | 2169 | 4 |
| May-21 | 31/05/2021 | 301795 | 1273 | 2174 | 5 |
| Jun-21 | 30/06/2021 | 302864 | 1069 | 2178 | 4 |
| Jul-21 | 31/07/2021 | 304005 | 1141 | 2183 | 5 |
| Aug-21 | 31/08/2021 | 305125 | 1120 | 2187 | 4 |
| Sep-21 | 30/09/2021 | 306177 | 1052 | 2191 | 4 |
| Oct-21 | 31/10/2021 | 307477 | 1300 | 2195 | 4 |
| Nov-21 | 30/11/2021 | 308492 | 1015 | 2200 | 5 |
| Dec-21 | 31/12/2021 | 309614 | 1122 | 2205 | 5 |

**Table 12 Electric energy and water consumption at Abrahama 28A i B over years 2018-2021; numbers denote meter codes**

| month - year | Abrahama 28A             |                         | Abrahama 28B             |                         |
|--------------|--------------------------|-------------------------|--------------------------|-------------------------|
|              | meter readout / kWh 8033 | Electricity usage / kWh | meter readout / kWh 4890 | Electricity usage / kWh |
|              | 4061                     |                         | 3137                     |                         |
| Jan-18       | 4228                     | 167                     | 3407                     | 270                     |
| Feb-18       | 4353                     | 125                     | 3605                     | 198                     |
| Mar-18       | 4461                     | 108                     | 3808                     | 203                     |
| Apr-18       | 4560                     | 99                      | 4002                     | 194                     |
| May-18       | 4627                     | 67                      | 4092                     | 90                      |
| Jun-18       | 4670                     | 43                      | 4147                     | 55                      |
| Jul-18       | 4732                     | 62                      | 4207                     | 60                      |
| Aug-18       | 4813                     | 81                      | 4282                     | 75                      |
| Sep-18       | 4888                     | 75                      | 4366                     | 84                      |
| Oct-18       | 5005                     | 117                     | 4538                     | 172                     |
| Nov-18       | 5083                     | 78                      | 4728                     | 190                     |
| Dec-18       | 5169                     | 86                      | 4930                     | 202                     |
| Jan-19       | 5241                     | 72                      | 5117                     | 187                     |
| Feb-19       | 5320                     | 79                      | 5287                     | 170                     |
| Mar-19       | 5437                     | 117                     | 5462                     | 175                     |
| Apr-19       | 5499                     | 62                      | 5635                     | 173                     |
| May-19       | 5542                     | 43                      | 5766                     | 131                     |

|        |      |     |       |     |
|--------|------|-----|-------|-----|
| Jun-19 | 5578 | 36  | 5828  | 62  |
| Jul-19 | 5657 | 79  | 5905  | 77  |
| Aug-19 | 5701 | 44  | 5970  | 65  |
| Sep-19 | 5773 | 72  | 6087  | 117 |
| Oct-19 | 5834 | 61  | 6262  | 175 |
| Nov-19 | 5912 | 78  | 6434  | 172 |
| Dec-19 | 6006 | 94  | 6611  | 177 |
| Jan-20 | 6085 | 79  | 6770  | 159 |
| Feb-20 | 6144 | 59  | 6979  | 209 |
| Mar-20 | 6206 | 62  | 7180  | 201 |
| Apr-20 | 6251 | 45  | 7340  | 160 |
| May-20 | 6295 | 44  | 7500  | 160 |
| Jun-20 | 6331 | 36  | 7568  | 68  |
| Jul-20 | 6366 | 35  | 7636  | 68  |
| Aug-20 | 6412 | 46  | 7710  | 74  |
| Sep-20 | 6465 | 53  | 7798  | 88  |
| Oct-20 | 6523 | 58  | 7975  | 177 |
| Nov-20 | 6594 | 71  | 8167  | 192 |
| Dec-20 | 6675 | 81  | 8361  | 194 |
| Jan-21 | 6787 | 112 | 8549  | 188 |
| Feb-21 | 6855 | 68  | 8727  | 178 |
| Mar-21 | 6919 | 64  | 8882  | 155 |
| Apr-21 | 6978 | 59  | 9040  | 158 |
| May-21 | 7023 | 45  | 9192  | 152 |
| Jun-21 | 7070 | 47  | 9249  | 57  |
| Jul-21 | 7138 | 68  | 9327  | 78  |
| Aug-21 | 7190 | 52  | 9394  | 67  |
| Sep-21 | 7250 | 60  | 9505  | 111 |
| Oct-21 | 7325 | 75  | 9743  | 238 |
| Nov-21 | 7395 | 70  | 9914  | 171 |
| Dec-21 | 7480 | 85  | 10096 | 182 |

**Table 13 Energy consumption in kWh by the respective garage complexes over years 2017-2021**

|        | Mickiewicza | Administration building | Next to bakery | Żeromskiego | Abrahama 1 | Abrahama 2 |
|--------|-------------|-------------------------|----------------|-------------|------------|------------|
| Jan-18 | 1177        | 760                     | 79             | 270         | 56         | 79         |
| Feb-18 | 991         | 671                     | 71             | 406         | 52         | 28         |
| Mar-18 | 1068        | 683                     | 63             | 443         | 52         | 29         |
| Apr-18 | 1015        | 708                     | 71             | 146         | 52         | 28         |
| May-18 | 808         | 733                     | 76             | 64          | 50         | 24         |
| Jun-18 | 459         | 277                     | 85             | 53          | 48         | 23         |

|        |      |      |    |     |      |    |
|--------|------|------|----|-----|------|----|
| Jul-18 | 509  | 458  | 98 | 46  | 59   | 24 |
| Aug-18 | 499  | 217  | 98 | 46  | 222  | 26 |
| Sep-18 | 493  | 531  | 65 | 71  | 160  | 26 |
| Oct-18 | 911  | 945  | 69 | 83  | 184  | 31 |
| Nov-18 | 1447 | 1163 | 67 | 85  | 163  | 31 |
| Dec-18 | 1726 | 1732 | 58 | 91  | 206  | 52 |
| Jan-19 | 1575 | 1672 | 64 | 74  | 188  | 37 |
| Feb-19 | 1540 | 1518 | 54 | 85  | 171  | 29 |
| Mar-19 | 1268 | 1400 | 58 | 84  | 190  | 27 |
| Apr-19 | 1097 | 1031 | 69 | 72  | 182  | 28 |
| May-19 | 480  | 404  | 38 | 97  | 187  | 25 |
| Jun-19 | 371  | 368  | 40 | 54  | 137  | 23 |
| Jul-19 | 469  | 486  | 85 | 67  | 55   | 26 |
| Aug-19 | 355  | 373  | 39 | 67  | 70   | 24 |
| Sep-19 | 622  | 692  | 42 | 77  | 54   | 27 |
| Oct-19 | 1127 | 794  | 29 | 108 | 0    | 32 |
| Nov-19 | 1479 | 1007 | 41 | 92  | 94   | 74 |
| Dec-19 | 1212 | 1332 | 28 | 89  | 52   | 85 |
| Jan-20 | 1109 | 1282 | 33 | 117 | 51   | 34 |
| Feb-20 | 914  | 1075 | 31 | 124 | 46   | 27 |
| Mar-20 | 1002 | 774  | 37 | 170 | 53   | 31 |
| Apr-20 | 829  | 167  | 38 | 72  | 48   | 27 |
| May-20 | 486  | 1336 | 29 | 111 | 54   | 26 |
| Jun-20 | 444  | 428  | 38 | 165 | 60   | 23 |
| Jul-20 | 366  | 255  | 29 | 173 | 48   | 24 |
| Aug-20 | 390  | 467  | 32 | 191 | 58   | 29 |
| Sep-20 | 412  | 505  | 31 | 70  | 49   | 28 |
| Oct-20 | 1207 | 738  | 24 | 79  | 46   | 31 |
| Nov-20 | 1431 | 1073 | 33 | 98  | 51   | 37 |
| Dec-20 | 1673 | 985  | 17 | 97  | 50   | 33 |
| Jan-21 | 2245 | 1245 | 25 | 110 | 46.8 | 42 |
| Feb-21 | 2535 | -168 | 19 | 123 | 42   | 52 |
| Mar-21 | 2560 | 1319 | 22 | 120 | 46   | 32 |
| Apr-21 | 728  | 143  | 29 | 73  | 41   | 25 |
| May-21 | 861  | 132  | 30 | 82  | 56   | 26 |
| Jun-21 | 1002 | 107  | 34 | 70  | 43   | 27 |
| Jul-21 | 773  | 104  | 39 | 75  | 43   | 28 |
| Aug-21 | 704  | 138  | 37 | 86  | 44   | 31 |
| Sep-21 | 611  | 139  | 30 | 158 | 44   | 31 |
| Oct-21 | 1206 | 172  | 23 | 96  | 47   | 36 |
| Nov-21 | 1097 | 154  | 18 | 90  | 40   | 31 |
| Dec-21 | 1881 | 394  | 20 | 94  | 43   | 32 |

## 9 Annex E

**Table 14 Heat usage in the heating period of 2016-2017**

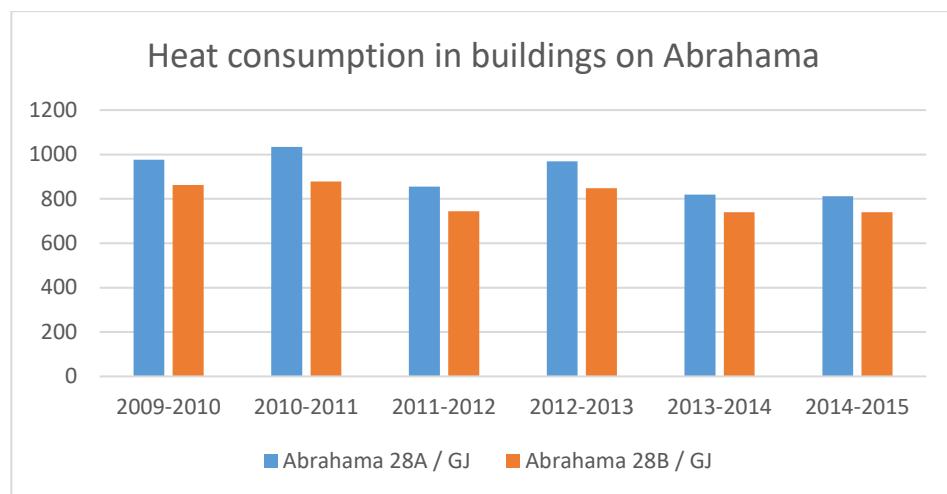
| Building                  | Heat usage in GJ |       |       |                |        |        |        |        |        |                | $\Sigma$ 01-05 | Total |
|---------------------------|------------------|-------|-------|----------------|--------|--------|--------|--------|--------|----------------|----------------|-------|
|                           | 2016 - OPEC      |       |       | 2017 - GPEC    |        |        |        |        |        |                |                |       |
|                           | Oct              | Nov   | Dec   | $\Sigma$ 10-12 | Jan    | Feb    | Mar    | Apr    | May    | $\Sigma$ 01-05 | Total          |       |
| Mickiewicza 55            | 141,4            | 202,1 | 241,5 | 585            | 211,4  | 190,6  | 191,2  | 152,9  | 95,1   | 841,2          | 1426,2         |       |
| Mickiewicza 57            | 138,2            | 193,2 | 223,7 | 555,1          | 232,3  | 183,5  | 180,5  | 143,8  | 87,4   | 827,5          | 1382,6         |       |
| Mickiewicza 59            | 148,5            | 205,7 | 231,9 | 586,1          | 238,58 | 192,51 | 190,7  | 150,68 | 97,21  | 869,68         | 1455,78        |       |
| Mickiewicza 61            | 144,5            | 199,1 | 228,4 | 572            | 257,4  | 206,94 | 214,3  | 170,65 | 105,41 | 954,7          | 1526,7         |       |
| Mickiewicza 63            | 156,1            | 217,3 | 250,5 | 623,9          | 273,19 | 211,21 | 200,96 | 158,05 | 98,83  | 942,24         | 1566,14        |       |
| Żeromskiego 43            | 150,2            | 214,1 | 252,2 | 616,5          | 250    | 188,27 | 195,13 | 152,68 | 93,51  | 879,59         | 1496,09        |       |
| Abrahama 28A              | 75,2             | 119,9 | 138,2 | 333,3          | 130    | 129,26 | 119,51 | 91,46  | 56,25  | 526,48         | 859,78         |       |
| Abrahama 28B              | 63,4             | 113,4 | 135,5 | 312,3          | 131,56 | 100,12 | 102,22 | 77,04  | 45,35  | 456,29         | 768,59         |       |
| Grottgera 6/8 *           | 128,5            | 169,7 | 191,5 | 489,7          | 198,5  | 165,7  | 160,1  | 115,7  | 67,7   | 707,7          | 1197,4         |       |
| Service Pavillion 48/50   | 29,3             | 48,6  | 51,9  | 129,8          | 64,71  | 56,54  | 54,98  | 43,39  | 26,58  | 246,2          | 376            |       |
| offices Mickiewicza 54/56 | 16,3             | 25,2  | 31,1  | 72,6           | 27,32  | 21,96  | 23,8   | 17,94  | 10,55  | 101,57         | 174,17         |       |
| Grottgera 6/8 *           | 9,4              | 15,1  | 15,8  | 40,3           | 23,5   | 12,3   | 7      | 4      | 5,5    | 52,3           | 92,6           |       |
| Hydropohore building 66   | 3                | 4,9   | 6,5   | 14,4           | 13,2   | 4,64   | 4,08   | 3,26   | 2,04   | 27,22          | 41,62          |       |

**Table 15 Heat usage for heating season 2020/2021**

| Building                  | Heat usage in GJ |        |        |         |        |        |        |         |
|---------------------------|------------------|--------|--------|---------|--------|--------|--------|---------|
|                           | 2020             |        |        | Σ 10-12 | 2021   |        |        | Σ 01-03 |
|                           | Oct.             | Nov    | Dec    |         | Jan    | Feb    | Mar    |         |
| Mickiewicza 55            | 107.7            | 142.2  | 270.8  | 520.7   | 243.2  | 221.2  | 202.8  | 667.2   |
| Mickiewicza 57            | 98.8             | 125    | 255    | 478.8   | 233.1  | 198.9  | 187.6  | 619.6   |
| Mickiewicza 59            | 113.57           | 130.89 | 253.24 | 497.7   | 226.05 | 142.94 | 196.69 | 565.68  |
| Mickiewicza 61            | 116              | 132.42 | 244.25 | 492.67  | 232.76 | 193.08 | 192.68 | 618.52  |
| Mickiewicza 63            | 132.08           | 133.3  | 256.46 | 521.84  | 262.35 | 231.43 | 208.1  | 701.88  |
| Żeromskiego 43            | 110.23           | 133.34 | 250.48 | 494.05  | 242.21 | 209.02 | 190.61 | 641.84  |
| Abrahama 28A              | 68.66            | 78.44  | 144.9  | 292     | 139.78 | 122.69 | 115.79 | 378.26  |
| Abrahama 28B              | 58.29            | 68.32  | 127.63 | 254.24  | 122.11 | 111.61 | 99.56  | 333.28  |
| Grottgera 6/8             | 76.6             | 120.2  | 171.9  | 368.7   | 207.1  | 175.3  | 144.6  | 527     |
| Service Pavillion 48/50   | 28.51            | 33.44  | 62.18  | 124.13  | 60.56  | 52.31  | 49.99  | 162.86  |
| offices Mickiewicza 54/56 | 12.66            | 15.52  | 29.71  | 57.89   | 28.46  | 23.51  | 25.86  | 77.83   |
| Grottgera 6/8             | 15.7             | 26.5   | 35.5   | 77.7    | 48.8   | 44.6   | 34.3   | 127.7   |
| Hydrophore building 66    | 2.57             | 3.5    | 4.19   | 10.26   | 5.34   | 5.22   | 4.52   | 15.08   |

**Table 16 Abrahama buildings total heat usage in heating seasons for years 2009-2015.**

| Heating season | Abrahama 28A / GJ | Abrahama 28B / GJ |
|----------------|-------------------|-------------------|
| 2009-2010      | 976               | 862,6             |
| 2010-2011      | 1033,6            | 878,4             |
| 2011-2012      | 854,7             | 744,6             |
| 2012-2013      | 969,6             | 848,1             |
| 2013-2014      | 818,8             | 740,1             |
| 2014-2015      | 812,5             | 739,9             |

**Figure 26 Plot of data from Table 14.**

## 10 Annex F

**Table 17 Water usage in 2<sup>nd</sup> quarter of 2020 for all the buildings of WSM; M stands for water provided by the city, whereas H denotes water provided by a local hydrophore available at the WSM**

| Building                 | Month |      | April |      | June |      | Subtotals |      | Total |
|--------------------------|-------|------|-------|------|------|------|-----------|------|-------|
|                          | M     | H    | M     | H    | M    | H    | M         | H    |       |
| Mickiewicza 55           | 63    | 347  | 70    | 337  | 83   | 342  | 216       | 1026 | 1242  |
| Mickiewicza 57           | 112   | 250  | 112   | 284  | 107  | 245  | 331       | 779  | 1110  |
| Mickiewicza 59           | 109   | 364  | 113   | 359  | 110  | 309  | 332       | 1032 | 1364  |
| Mickiewicza 61           | 147   | 278  | 148   | 260  | 133  | 221  | 428       | 759  | 1187  |
| Mickiewicza 63           | 100   | 343  | 109   | 446  | 103  | 363  | 312       | 1152 | 1464  |
| Żeromskiego 43           | 0     | 424  | 0     | 428  | 0    | 374  | 0         | 1226 | 1226  |
| Abrahama 28A             | 120   | 0    | 140   | 0    | 139  | 0    | 399       | 0    | 399   |
| Abrahama 28B             | 171   | 0    | 190   | 0    | 194  | 0    | 555       | 0    | 555   |
| Hydrophore 66            | 0     | 2006 | 0     | 2120 | 0    | 1861 | 0         | 5987 | 5987  |
| Grottgera 6/8            | 290   | 0    | 333   | 0    | 321  | 0    | 944       | 0    | 944   |
| Grottgera 8a - extension | 3     | 0    | 3     | 0    | 4    | 0    | 10        | 0    | 10    |
| Grottgera 6/8 heater     | 106   | 0    | 113   | 0    | 101  | 0    | 320       | 0    | 320   |

|                                    |      |   |      |   |      |   |      |    |      |
|------------------------------------|------|---|------|---|------|---|------|----|------|
| Offices<br>Mickiewicza<br>54/56    | 0    | 5 | 0    | 6 | 0    | 7 | 0    | 18 | 18   |
| Heater<br>Mickiewicza<br>65        | 0    | 0 | 0    | 0 | 0    | 0 | 0    | 0  | 0    |
| Main water<br>meter<br>Mickiewicza | 2606 | 0 | 2487 | 0 | 2725 | 0 | 7818 | 0  | 7818 |

**Table 18 Water usage readings at the municipal meter and the hydrophore meter for the period of 2017-2021**

|        | Municipal meter / m <sup>3</sup> | Hydrophore meter / m <sup>3</sup> |
|--------|----------------------------------|-----------------------------------|
| Jan-18 | 3214                             | 1985                              |
| Feb-18 | 2203                             | 1620                              |
| Mar-18 | 2420                             | 1794                              |
| Apr-18 | 2440                             | 1883                              |
| May-18 | 2568                             | 1786                              |
| Jun-18 | 2421                             | 1776                              |
| Jul-18 | 2933                             | 2234                              |
| Aug-18 | 2767                             | 2023                              |
| Sep-18 | 2142                             | 1603                              |
| Oct-18 | 2673                             | 1983                              |
| Nov-18 | 2528                             | 1902                              |
| Dec-18 | 2507                             | 2084                              |
| Jan-19 | 2746                             | 1920                              |
| Feb-19 | 2264                             | 1726                              |
| Mar-19 | 2463                             | 1832                              |
| Apr-19 | 2696                             | 2058                              |
| May-19 | 2606                             | 1999                              |
| Jun-19 | 2417                             | 1883                              |
| Jul-19 | 2671                             | 2203                              |
| Aug-19 | 2436                             | 1928                              |
| Sep-19 | 2393                             | 2048                              |
| Oct-19 | 2805                             | 2008                              |
| Nov-19 | 2358                             | 1795                              |
| Dec-19 | 2622                             | 2023                              |
| Jan-20 | 2549                             | 1969                              |
| Feb-20 | 2306                             | 1771                              |
| Mar-20 | 2715                             | 2113                              |
| Apr-20 | 2606                             | 2006                              |
| May-20 | 2287                             | 2120                              |
| Jun-20 | 2925                             | 1861                              |
| Jul-20 | 2598                             | 1901                              |

|        |      |      |
|--------|------|------|
| Aug-20 | 2200 | 2083 |
| Sep-20 | 2946 | 1873 |
| Oct-20 | 2560 | 1884 |
| Nov-20 | 2561 | 2002 |
| Dec-20 | 2851 | 2087 |
| Jan-21 | 2477 | 2048 |
| Feb-21 | 2435 | 1838 |
| Mar-21 | 2731 | 1864 |
| Apr-21 | 2499 | 1838 |
| May-21 | 2361 | 1978 |
| Jun-21 | 2620 | 1874 |
| Jul-21 | 2617 | 1848 |
| Aug-21 | 2469 | 1991 |
| Sep-21 | 2304 | 1834 |
| Oct-21 | 2768 | 2052 |
| Nov-21 | 2283 | 1731 |
| Dec-21 | 2407 | 1781 |