

OP 08: PROJECT “Colbert”, Colombes

RENOVATION APPROACH DOCUMENT

outPHit

Deep retrofits made faster, cheaper and more reliable

Call: H2020-LC-SC3-2018-2019-2020 / H2020-LC-SC3-EE-2020-1

Deliverable D5.2

*Last updated 30. September 2022 by
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OUTPHIT – DEEP RETROFITS MADE FASTER, CHEAPER AND MORE RELIABLE

outPHit pairs such approaches with the rigour of Passive House principles to make deep retrofits cost-effective, faster and more reliable. On the basis of case studies across Europe and in collaboration with a wide variety of stakeholders, outPHit is addressing barriers to the uptake of high quality deep retrofits while facilitating the development of high performance renovation systems, tools for decision making and quality assurance safeguards.

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OP08_COLBERT_COLOMBES

Renovation Approach Description

TABLE OF CONTENTS

- 1. Executive Summary 3
- 2. Description of the existing building 4
 - 2.1. Building data 4
 - 2.2. Owner data..... 4
 - 2.3. Location description..... 5
 - 2.4. Original situation..... 5
 - 2.5. Plans and pictures of the existing building 5
 - 2.6. Envelope of the existing building 6
 - 2.7. Technical equipment of the existing building..... 7
 - 2.8. Energy efficiency of the existing building 7
- 3. Renovation approach description 9
 - 3.1. EnerPHit standard approach 9
 - 3.2. Design / Consultancy teams..... 10
 - 3.3. Design / Construction periods..... 10
 - 3.4. Plans and pictures of the renovation 10
 - 3.5. Envelope of the renovated building..... 13
 - 3.6. Technical equipment of the renovated building..... 14
 - 3.7. Summer comfort 14
 - 3.8. Energy efficiency of the renovated building 14
 - 3.9. Predicted energy savings 17
 - 3.10. RES strategy 17
- 4. Project challenges and opportunities 18
- 5. Current project status 19
- 6. Lessons learnt and guidelines for replication 20
- 7. Pre-Monitoring description (if applicable)..... 21

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Renovation Approach Description

1. Executive Summary

FR-OP08, Résidence Colbert, à Colombes, Logirep-Polylogis

Three residential buildings ("A", "B", "C") with 70 dwellings and 5 levels, owned and built in the 70s by Logirep located rue Colbert in Colombes. In 2010, in urgent need for renovation.

The EnerPHit standard has been chosen as it seems to be ambitious adapted to this plain façade buildings.

Project was finished in 2021. We are still waiting for real consumption data and to close certification file

Retrofitting and Switching from gas to wood pellet saves **200 TCo2/a**

Carbon **saved on no-deconstruction**: 700 m³ concrete = **700 t CO₂**

Carbon stored in prefab modules: to be calculated soon

Costs saved for Logirep: to be calculated soon



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2. Description of the existing building

1970 built RES Building in the dense centre of Colombes, west suburb of Paris.

Three buildings same construction (A: 2529 m², B: 1523 m², C: 1768 m²) to be retrofitted



Building data

Year of construction:	1971
Treated Floor Area:	5472
Number of floors:	5
Number of apartments:	70
Building typology (residential / other):	RES
Main construction type (e.g. massive)	Reinforced concrete

2.1. Owner data

Name:	Logirep/Polylogis
City:	Colombes
Type (private / housing association):	social building company

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Renovation Approach Description

2.2. Location description

Paris/ near suburb

2.3. Original situation

Reinforced concrete

2.4. Plans and pictures of the existing building

- Plans: 1 Goundfloor Plan / 1 section or elevation if available
- Pictures: 1-2 pictures maximum, inside or outside

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2.5. Envelope of the existing building

External walls

Material:	reinforced concrete
Thickness:	28 [cm]
Surface (Render / Brick / Cladding):	concrete
U-Value:	2,0 [W/(m ² K)]

Basement walls (delete if not applicable)

Material:	reinforced concrete
Thickness:	28 [cm]
Surface (Render / Brick / Cladding):	concrete
U-Value:	2,0 [W/(m ² K)]

Floor slab / Basement ceiling

Material:	reinforced concrete
Thickness:	28 [cm]
Surface (Render / Brick / Cladding):	concrete
U-Value:	2,0 [W/(m ² K)]

Roof / Top floor ceiling

Material:	reinforced concrete
Thickness:	29 [cm]
Surface (Render / Brick / Cladding):	concrete
U-Value:	2,0 [W/(m ² K)]

Windows

Material:	single glaze
Thickness:	xxx [cm]
Material (Wood / Plastic / Aluminium):	xxx
U-Value (Uw, installed):	5 [W/(m ² K)]

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2.6. Technical equipment of the existing building

Ventilation

Ventilation concept: windows opening

Add short description if required

Heating, Cooling and DHW

Heating: gas

Cooling: none

Domestic hot water: gas

2.7. Energy efficiency of the existing building

Passive House Planning Package (PHPP)

PHPP calculation: PHPP_XX.X

Space heating demand: 250 [kWh/(m²a)]

Heating Load: xxx [W/m²]

Overheating frequency: xxx %

Cooling demand: xxx [kWh/(m²a)]

Cooling Load: xxx [W/m²]

Primary Energy Demand: xxx [kWh/(m²a)]

PER Demand: xxx [kWh/(m²a)]

Final Energy demand

Final energy demand gas: xxx [kWh/(m²a)]

Final energy demand oil: xxx [kWh/(m²a)]

Final energy demand electricity: xxx [kWh/(m²a)]

Final energy demand other: xxx [kWh/(m²a)]

Available consumption before renovation

Annual energy consumption gas: xxx [kWh/(m²a)]

Annual energy consumption oil: xxx [kWh/(m²a)]

Annual energy consumption electricity: xxx [kWh/(m²a)]

Annual energy consumption other: xxx [kWh/(m²a)]

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Renovation Approach Description

Available energy costs before renovation

Annual energy costs gas:	xxx [€/m ² a]
Annual energy costs oil:	xxx [kWh/m ² a]
Annual energy costs electricity:	xxx [kWh/m ² a]
Annual energy costs other:	xxx [kWh/m ² a]

PHPP verification sheet before retrofit

Bills still under analysis. Approximately 250 kWh/m².a gas heating

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Renovation Approach Description

3. Renovation approach description

Flat façade making the retrofit apparently easy, the renovation project started in 2013

Global prefabricated retrofit. Use of “Panobloc” pre-fab facade:

<https://www.techniwood.fr/fr/solutions-techniques/panobloc/presentation>



3.1. EnerPHit standard approach

EnerPHit standard target (class):	Classique
Climate Zone	Paris
EnerPHit verification method:	calculation

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Renovation Approach Description

3.2. Design / Consultancy teams

ARCHITECTE



LANCTUIT ARCHITECTURE
21 Rue Charles Laffite
92200 Neuilly-sur-Seine

ENTREPRISE GENERALE



EIFFAGE
14-18 Rue de la Vierge
92120 Montrouge

BET THERMIQUE



INDIGO
40 Rue de l'Éclairier
75010 Paris

ENTREPRISE BOIS



ECOLOGIA BATIMENT
35 Rue Haroun Tazief
94320 Maxéville

PILOTAGE



INDOTPE
59 Boulevard de Verdun
94120 Fontenay-sous-Bois

BET FACADES



ACTR
44 Rue de la Commanderie
45790 Boigny-sur-Loire

3.3. Design / Construction periods

Design period: xx.2012 – xx.2017

Construction period: xx.2018 – xx.2021

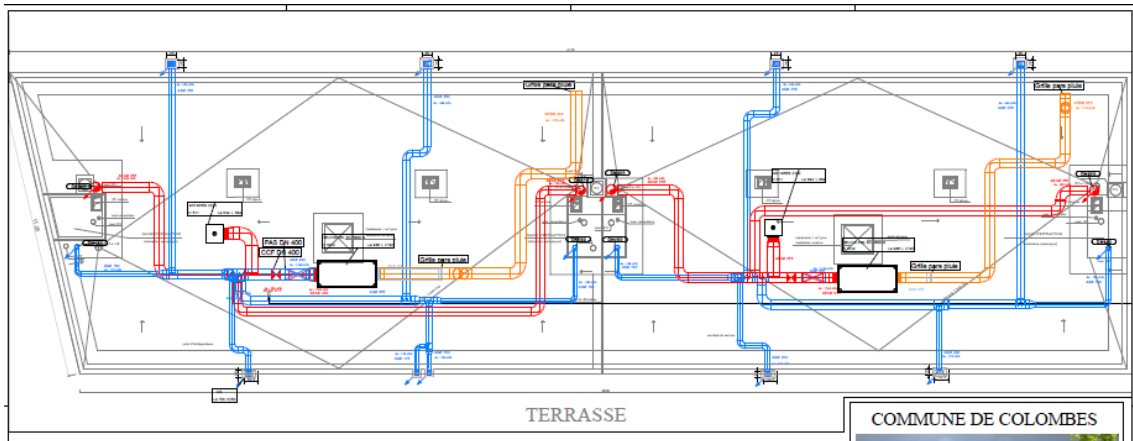
3.4. Plans and pictures of the renovation

- Plans: 1-2 Groundfloor Plans / 1 section and elevation if available
- Details: 2-3 connection details
- Pictures: 3-4 pictures maximum, inside or outside

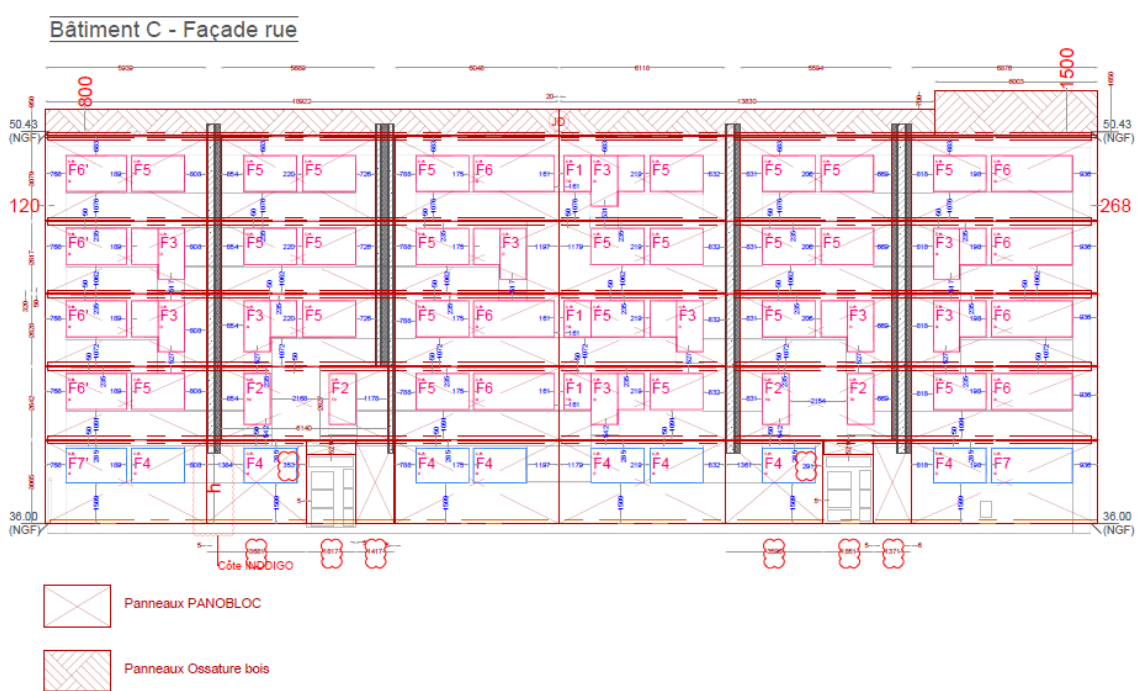
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Roof bat C:



Layout Panobloc:

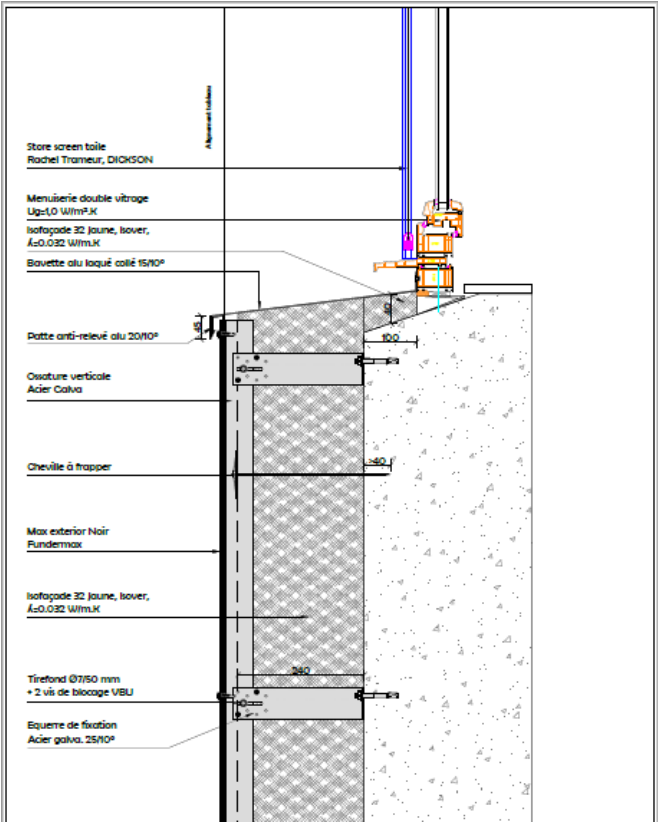
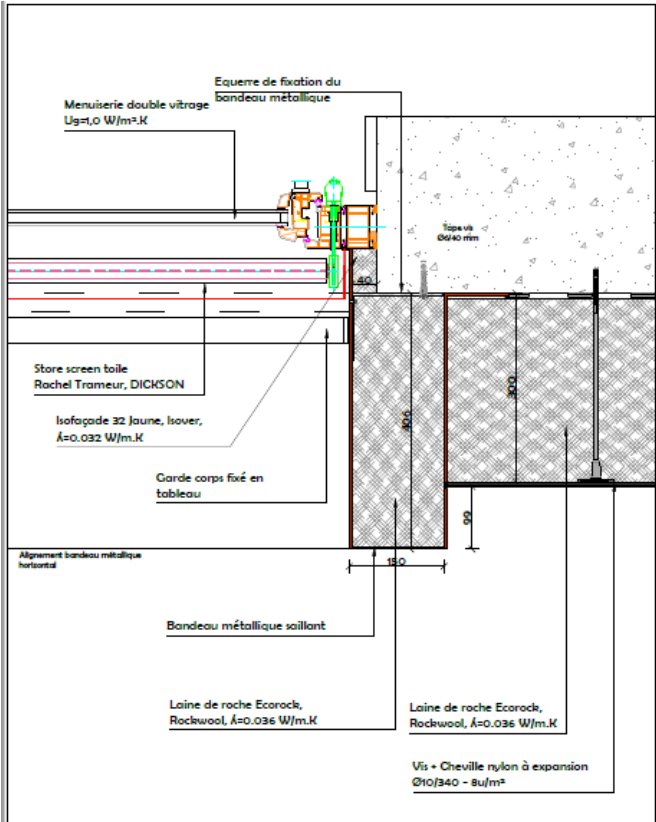


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Renovation Approach Description



Carpentry detail book:



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3.5. Envelope of the renovated building

External walls

Material:	Prefab modules
Thickness:	61 [cm]
Surface (Render / Brick / Cladding):	cladding
U-Value:	0,121 [W/(m ² K)]

Basement walls (delete if not applicable)

Material:	xxx
Thickness:	xxx [cm]
Surface (Render / Brick / Cladding):	xxx
U-Value:	xxx [W/(m ² K)]

Floor slab / Basement ceiling

Material:	xxx
Thickness:	xxx [cm]
Surface (Render / Brick / Cladding):	xxx
U-Value:	xxx [W/(m ² K)]

Roof / Top floor ceiling

Material:	xxx
Thickness:	xxx [cm]
Surface (Render / Brick / Cladding):	xxx
U-Value:	xxx [W/(m ² K)]

Windows

Material:	xxx
Thickness:	xxx [cm]
Material (Wood / Plastic / Aluminium):	xxx
U-Value (Uw, installed):	xxx [W/(m ² K)]

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Renovation Approach Description

3.6. Technical equipment of the renovated building

Ventilation

Ventilation concept (central / decentral)	Swegon
Ventilation heat recovery efficiency	90 %
Ventilation specific efficiency	0,45 [Wh/m ³]
Ventilation standard air flow rate	xxx [m ³ /h]
Add short description if required	

Heating, Cooling and DHW

Heating:	wood pellets
Cooling:	none
Domestic hot water:	wood pellets

3.7. Summer comfort

Add short description of summer comfort approach, include

- Summer ventilation
- Temporary summer shading
- Fixed shading
- Reduction of internal heat gains
- Active Cooling if applicable

3.8. Energy efficiency of the renovated building

Passive House Planning Package (PHPP)

PHPP calculation:	PHPP_9.6
Space heating demand:	20 [kWh/(m ² a)]
Heating Load:	12 [W/m ²]
Overheating frequency:	1 %
Cooling demand:	- [kWh/(m ² a)]
Cooling Load:	- [W/m ²]
Primary Energy Demand:	112 [kWh/(m ² a)]
PER Demand:	151 [kWh/(m ² a)]
Airtightness n50 target:	0,6 1/h

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Final Energy demand

Final energy demand gas:	0 [kWh/(m ² a)]
Final energy demand oil:	0 [kWh/(m ² a)]
Final energy demand electricity:	112/2,58 [kWh/(m ² a)]
Final energy demand other: wood	20 [kWh/(m ² a)]

PHPP verification sheet after retrofit

Building "A":

Performance énergétique annuelle du bâtiment				Critères alternatifs		Conforme? ²
				Critères	Critères alternatifs	
Chauffer	Surface de référence énergétique: m ²	2529,0				
	Besoin de chauffage kWh/(m ² a)	20	≤	20	-	oui
	Puissance de chauffe W/m ²	12	≤	-	-	
Refroidir	Refroidissement + déshumidification kWh/(m ² a)	-	≤	-	-	-
	Puissance de refroidissement W/m ²	-	≤	-	-	
	Fréquence de surchauffe (> 25°C) %	7	≤	10		oui
	Fréquence d'humidité excessive (> 12 g/kg) %	0	≤	20		oui
Etanchéité à l'air	Test d'infiltrométrie n ₅₀ 1/h	0,6	≤	1,0		oui
Energie primaire non-renouvelable (EP)	Consommation d' EP kWh/(m ² a)	93	≤	126,232279		oui
Energie primaire renouvelable (EP-R)	Consommation d'EP-R kWh/(m ² a)	129	≤	-	-	
	Production d'énergie renouvelable (par rapport à la surface au sol kWh/(m ² a) de la zone bâtie)	0	≥	-	-	-

²champ vide: les données sont manquantes; "-": Aucune exigence

Building "B"

Performance énergétique annuelle du bâtiment				Critères alternatifs		Conforme? ²
				Critères	Critères alternatifs	
Chauffer	Surface de référence énergétique: m ²	1523,0				
	Besoin de chauffage kWh/(m ² a)	20	≤	20	-	oui
	Puissance de chauffe W/m ²	12	≤	-	-	
Refroidir	Refroidissement + déshumidification kWh/(m ² a)	-	≤	-	-	-
	Puissance de refroidissement W/m ²	-	≤	-	-	
	Fréquence de surchauffe (> 25°C) %	8	≤	10		oui
	Fréquence d'humidité excessive (> 12 g/kg) %	0	≤	20		oui
Etanchéité à l'air	Test d'infiltrométrie n ₅₀ 1/h	0,6	≤	1,0		oui
Energie primaire non-renouvelable (EP)	Consommation d' EP kWh/(m ² a)	117	≤	126,240184		oui
Energie primaire renouvelable (EP-R)	Consommation d'EP-R kWh/(m ² a)	149	≤	-	-	
	Production d'énergie renouvelable (par rapport à la surface au sol kWh/(m ² a) de la zone bâtie)	0	≥	-	-	-

²champ vide: les données sont manquantes; "-": Aucune exigence

Building "C"

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Renovation Approach Description

Performance énergétique annuelle du bâtiment				Critères		Conforme? ²
Surface de référence énergétique: m ²		1768,0		Critères	Critères alternatifs	
Chauffer	Besoin de chauffage kWh/(m ² a)	21	≤	20	-	non
	Puissance de chauffe W/m ²	12	≤	-	-	
Refroidir	Refroidissement + déshumidification kWh/(m ² a)	-	≤	-	-	-
	Puissance de refroidissement W/m ²	-	≤	-	-	-
	Fréquence de surchauffe (> 25°C) %	1	≤	10		oui
	Fréquence d'humidité excessive (> 12 g/kg) %	0	≤	20		oui
Etanchéité à l'air	Test d'infiltrométrie n ₅₀ 1/h	0,6	≤	1,0		oui
Energie primaire non-renouvelable (EP)	Consommation d' EP kWh/(m ² a)	112	≤	127,50814		oui
Energie primaire renouvelable (EP-R)	Consommation d'EP-R kWh/(m ² a)	151	≤	-	-	-
	Production d'énergie renouvelable (par rapport à la surface au sol kWh/(m ² a) de la zone bâtie)	0	≥	-	-	

²champ vide: les données sont manquantes; '-': Aucune exigence

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Renovation Approach Description

3.9. Predicted energy savings

In space heating demand:	250 - 20 [kWh/(m ² a)]
Primary Energy Demand:	xxx [kWh/(m ² a)]
PER Demand:	xxx [kWh/(m ² a)]
Final energy demand gas:	xxx [kWh/(m ² a)]
Final energy demand oil:	xxx [kWh/(m ² a)]
Final energy demand electricity:	xxx [kWh/(m ² a)]
Final energy demand other:	xxx [kWh/(m ² a)]

3.10. RES strategy

Short description of the RES strategy

PV Systems

Location (Pitched / flat roof or façade):	xxx
Orientation (East / South / West):	xxx
PV Technology (Amorph/Mono/Poly):	xxx
PV area:	xxx [m ²]
Installed kW Peak	xxx [kW]
Annual electricity yield absolute:	xxx [kWh/a]

Solar Thermal Systems

Location (Pitched / flat roof or façade):	xxx
Orientation (East / South / West):	xxx
Technology (Flat Plate / Evacuated tube):	xxx
Solar collector area:	xxx [m ²]
Solar contribution (DHW/Heating/Both):	xxx
Annual solar contribution absolute:	xxx [kWh/a]

Add picture if available

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4. Project challenges and opportunities

Typical “prototype” project. For Logirep as well as for participating companies:

Add pictures, sketches, details, diagrams, if available

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5. Current project status

Heavy work on-site mainly finished in 2020 after 2 years delay. Finishing works still on going in 2022.

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Renovation Approach Description

6. Lessons learnt and guidelines for replication

Still waiting for final data. Lessons learnt will follow

Add pictures, sketches, details, diagrams, if available

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Renovation Approach Description

7. Pre-Monitoring description (if applicable)

Short description of the pre-monitoring, include information on

- Comfort and hygiene: conclusions
- Thermography
- Air quality measurements: conclusions
- Satisfaction questionnaires: conclusions

Number of apartments: xxx

Period of pre-monitoring: xx.202x – xx.202x

Add pictures, sketches, details, diagrams, if available