



Shelter
associates

On housing typologies, ways of life and toilet construction in the settlement of Prem Nagar

In the settlement of Prem Nagar, the NGO Shelter Associates is improving living conditions of the urban poor by supervising and partly subsidizing the construction of 150 individual toilets in residents' homes. A case study, conducted in 37 randomly selected beneficiary houses, provides a glimpse into the living spaces of Prem Nagar's inhabitants. The study brings to light the impact construction of an individual toilet has on small spaces and highlights the creativity and commitment beneficiaries show in this building process. As will be shown, the construction of an individual toilet in the home can be the starting point of many other improvements to residents' living conditions.

It is mid-morning in the settlement of Prem Nagar. Mr. Kumbhar is getting ready for work; he is taking a bucket-bath in the newly-constructed toilet and bathroom, which can be found in the back of the house. An opening from the kitchen leads into the new room, which is a spacious 23.7 sq ft (2.2 m²), lit both by natural and artificial light. The toilet pan is located towards the back of this space and is separated from the bathroom area by a small step. The tiles that line both the interior and exterior of this room reflect a shift from the old to the new in the Kumbhar's home; older green and yellow tiles are paired with new white and blue tiles on the toilet's walls, while the standard blue-grey diamond-designed tiles given by Shelter Associates decorate the kitchen wall. The door to this room hasn't yet been installed, but the masons are already there, waiting for Mr. Kumbhar to finish his bath in order to put the door into place. The brown glassfiber door was made using on-site measurements and will be installed in the Kumbhar's house within 10 minutes. Following the door's installation, the combined toilet and bathroom will be officially complete, and Shelter Associates' sticker will be put on the structure.

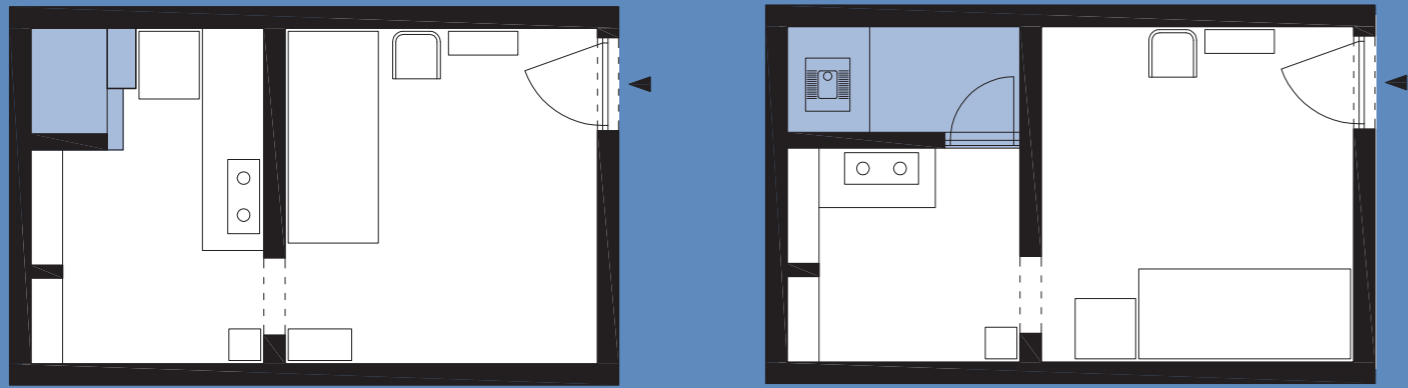


The city of Pune is home to nearly 4 million inhabitants¹, of which 40% live in slums². Prem Nagar is located in the heart of the city, near the city's central market place. The boundaries of the settlement are shown in red on the map above. Established in 1973, Prem Nagar has around 3,800 inhabitants, who live in 758 pucca or semi-pucca houses spread over an area of approximately 21,000 m². Like 90% of Pune's slums³, the settlement is equipped with a sewerage network, a prerequisite for Shelter Associates to start working within the community. The network has been constructed and is maintained by the Pune Municipal Corporation. The estimated 3,800 inhabitants share 4 community toilet blocks, which host 35 seats for females and 29 seats for males. In the settlement of Prem Nagar, electricity is available every day; running water, however, is available only every other day due to water shortages in the city. Inhabitants must therefore store water, which they use not only to wash themselves, their clothes, and the dishes, but which they also use to drink.

¹ figure for 2015, www.worldpopulationreview.com

² according to Pune Municipal Corporation, 2011

³ Shelter Associates, 2014



The Kumbhar's house before (left) and after (right) Shelter Associates' intervention.



The former bathroom is shown on the left. The newly-built combined bathroom and toilet is an enclosed space accessible by a door.

Mr. and Mrs. Kumbhar live with their two children in the 178 sq ft (16.5 m²) house that they rent. From the street, their home's carved wooden door invites all to enter under the protection of Lakshmi, goddess of wealth, whose likeness adorns a tile above the door opening. The first area within the house, which measures 6.5 ft by 10 ft (2.95 m by 3.17 m), is furnished with a single bed, two chairs and a refrigerator. A television, a typical fixture within every household, is surprisingly nowhere to be found. As is common in the majority of households in Prem Nagar, furniture is scarce because some family members sleep on mattresses and blankets that they roll out on the tiled floor for the night. They also eat

and sometimes cook on the floor. The space is also occupied by home exercise machines, which Mr. Kumbhar repairs. An opening in the corner of the room leads to a second space, which is both smaller and more crowded. This room contains the kitchen, which consists of a kitchen platform, a two-burner cooking stove, as well as storage shelves for dishes and food containers, and the 'deoghar', a small family shrine. Next to the kitchen platform, the new fiberglass door gives access to the combined toilet and bathroom. The 25 sq ft (2.3 m²) enclosed space - which represents 14 % of the house's total area - was formerly occupied by a 12 sq ft (1.1 m²) bathroom.

A case study on living spaces

A case study was conducted in the settlement of Prem Nagar in order to explore the impact the construction of an individual toilet has on small living spaces. For this case study, 37 houses were randomly selected from the total 140 houses in Prem Nagar that have received help from Shelter Associates to build individual toilets. It was determined that the houses included in my sample measure, by average, 167 sq ft (15.5 m²) and shelters an average of 5 people; this represents a total of around 34 sq ft (3 m²) per person. To be more precise, the selected houses in Prem Nagar range in size from 86 to 280 sq ft (8 to 26 m²) and provide shelter to anywhere from 1 to 9 people.

In most cases, a house in Prem Nagar has a single room or has two rooms connected by a single door opening. Instead of two separated rooms, houses often consist of one single space partitioned by a wall. This wall, which doesn't reach the ceiling, provides the impression that the house contains two rooms, when it is in fact a single space. Most houses have only one floor, but some have two levels which are connected by a steep and narrow outdoor or indoor staircase. Thus, house typologies aren't very diverse: true variety in the settlement lies in the freedom every household has to adapt interior space to their own needs.

When Shelter Associates started working with this community, all households already had access to a personal bathroom. At first, many inhabitants were reluctant to get an individual toilet in their house because they worried that their houses were too small or they were afraid of bad smells from the toilet. In fact, most of the households who constructed an individual toilet decided to convert their bathroom into a space combining both a toilet and a bathroom, which was both an economical and practical solution. The bathroom space usually had to be extended in order to accommodate the bathroom as well



Two bathrooms and the cement structure constructed in the street.

A typical bathroom in Prem Nagar is a space inside the house, defined by half-length or full-length brick walls. In order to provide additional privacy, metal containers are sometimes stacked on top of the half-length walls or a curtain is hung over the door opening. Residents use the bathroom to wash themselves, as well as to wash clothes and wash the dishes; these two activities often take place outside as well, as each household usually has an outdoor water connection. A simple cement structure constructed in the street is used to direct the water to the drainage line.

as a raised platform for the toilet pan but some households decided to construct their toilet within the existing walls and thus only needed to build the interior and add a door. In some cases, the combined toilet and bathroom space is as small as 9.7 sq ft (0.9 m²); in order to use the space as a bathroom, users must put a board on the toilet pan (see ill. 1). Only in very few cases do the bathroom and the toilet occupy two different spaces (see ill. 2). In other cases, the organization of the interior space was remodeled in order to accommodate the new toilet, giving way to more convenient spaces (see ill. 3).

At first, some families started building new structures for the toilet outside their houses at street level, a practice which was quickly forbidden; construction of toilets outside of homes was banned because these structures reduced space in Prem Nagar's roads and blocked access for emergency vehicles. Inhabitants use the outdoor space as an extension of the small houses they live in; as many social activities take place in the street, from clothes washing to grain sorting, it is a space too valuable to lose. Only in very few cases could the toilet be built outside, on the first floor.

Fostering creativity and empowering the urban poor

As illustrated above, the toilets have different dimensions and are equipped differently, according to each space and household's financial means. One of the undisputed qualities of Shelter Associates' scheme is to empower inhabitants to actively raise their living standard and develop their community. Individual toilet construction fosters creativity, as each household must find a solution adapted to their house and financial condition.

When constructing the toilet, some inhabitants even take future plans into account. One household constructed a western toilet, thinking about when they are elderly, while another household included



Shelter Associates is a Civil Society Organization which has been working for more than 20 years with communities in slums and informal settlements in Pune, Kolhapur and Sangli in order to provide technical support for improved housing and to provide essential services.

Thanks to architects, GIS specialists, social workers, planners and sociologists, Shelter Associates gathers data in the field and maps slums using GIS (Geographic Information System) technology.

The organization currently runs a project called "One Home, One Toilet", which gives participating households access to an individual toilet inside their homes. The material needed to construct an individual toilet is delivered by Shelter Associates for free; however, it is each household's responsibility to ensure the toilet is constructed within a short period of time. The work is often conducted by a mason from the community itself. In addition to supervising the construction of the toilet, Shelter Associates is also involved with the community on a social level.

a pipe connection in the wall, so that they might be able to connect a water tank to their toilet at some point in the future.

The toilet: a starting point to many improvements in the house

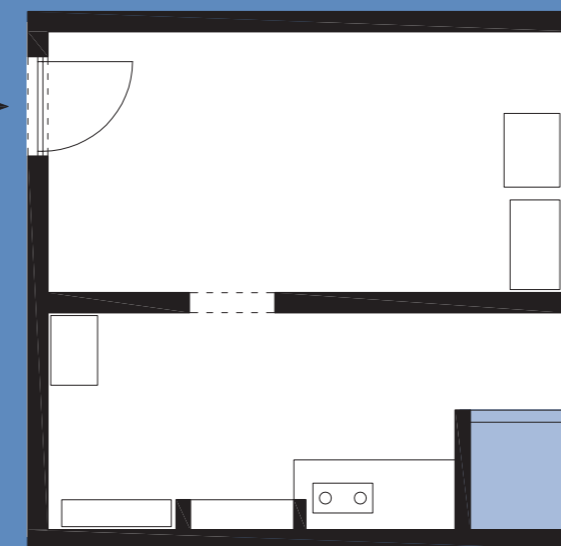
On average, Shelter Associates' beneficiaries devoted 9% of their house to the bathroom prior to toilet installation; after the organization's intervention, the newly-built toilet and bathroom occupies an average of 13% of the total house area. These numbers reflect inhabitants' willingness to lose some space in their homes in order to gain an individual toilet. In fact, providing the urban poor with the opportunity to construct an individual toilet isn't only about improving sanitary conditions in slums; it is also about inspiring residents to



Illustration 1: In this house, 6 people live in 215 sq ft (20 m²) on two floors. They needed to extend the existing bathroom structure of 1 ft (0.3 m) in order to build the toilet and bathroom. In order to use it as a bathroom, inhabitants put a board on the toilet pan, as illustrated in the pictures above.

Illustration 2: In this case, the household decided not to transform the existing bathroom as a combined toilet and bathroom. The toilet is located in a corner formerly occupied by the family shrine. The former bathroom is still in use and the shrine has been shifted to a shelf, as illustrated in the pictures above.

Plan before Shelter Associates' intervention



Plan after Shelter Associates' intervention

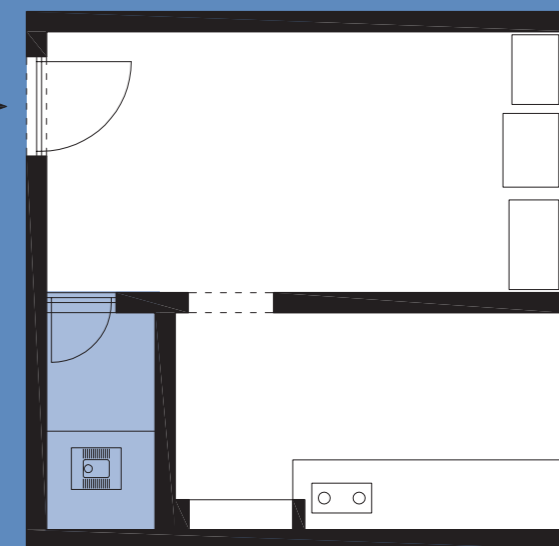


Illustration 3: The house's plan, as seen before (on the left) and after (on the right) Shelter Associates' intervention. Prior to intervention, the household had a small bathroom next to the kitchen at the back of the house and they used the community toilet block. Now they have constructed a proper toilet space, which is also used as a bathroom. The kitchen platform was extended and the combined toilet and bathroom is conveniently located near the drainage line which runs under the street.

make other positive improvements to their lives and their homes. Prior to Shelter Associates' intervention, for example, some residents had cooked on the floor of their homes. The construction of an individual toilet in their house offered these families the perfect opportunity to build a kitchen platform next to their new toilet. In some cases, the household could extend the kitchen platform by destroying the bathroom or by reorganizing the space. Furthermore, in some other houses, the construction of the toilet sparked the renovation of the whole house (see ill. 4 and 5). The inhabitants spend on average Rs. 5,300 for the masonry work - which includes the construction of the toilet walls, the laying of the toilet seat and the pipe connection to the drainage line, as well as the tiling work. In total, the residents said that they paid an average of Rs. 10,700 for labor charges and extra material. Even if these numbers should be taken with a grain of salt, it shows inhabitants' willingness to spend money in order to improve their homes. Considering that the declared average monthly income of the randomly selected households in Prem Nagar amounts to Rs. 12,200, this total cost represents indeed a large sum for these families.

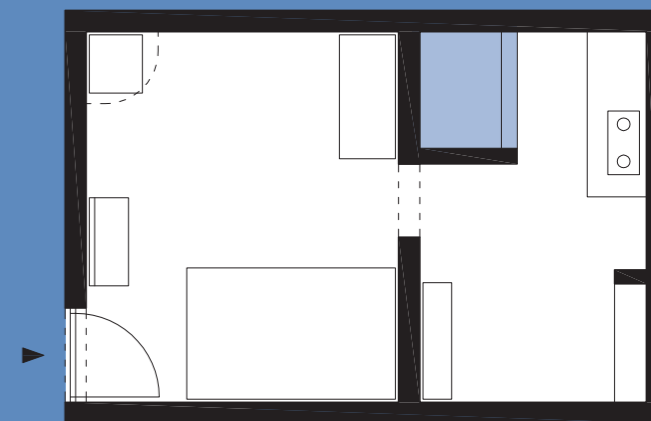
To conclude, this case study demonstrates the willingness of the inhabitants of Prem Nagar to devote more space within their homes to an individual toilet; despite the small size of the average home in Prem Nagar, the residents recognize that they have much to gain with the construction of an individual toilet. It also illustrates the creativity some inhabitants show in remodeling their homes in order to use the space more efficiently. Moreover, this study shows how the installation of an individual toilet can be the starting point of other improvements to the living conditions of the inhabitants of the settlement.



The study of Prem Nagar in numbers

Average area of a house	167 sq ft (15.5 m ²)
Average number of inhabitants in one house	5 people
Average percentage of total house area devoted to bathroom formerly	9% (16 sq ft/ 1.5 m ²)
Average percentage of total house area currently devoted to combined toilet and bathroom	13% (22 sq ft/ 2 m ²)
Average cost for the mason	Rs. 5,300
Average total cost	Rs. 10,700
Average monthly household income	Rs. 12,200

Study, text and pictures: Laurence Beuchat
 Text review: Moira McCrave-Carragee
 Thanks to Reshma Pagnis and Aishwarya Brahma

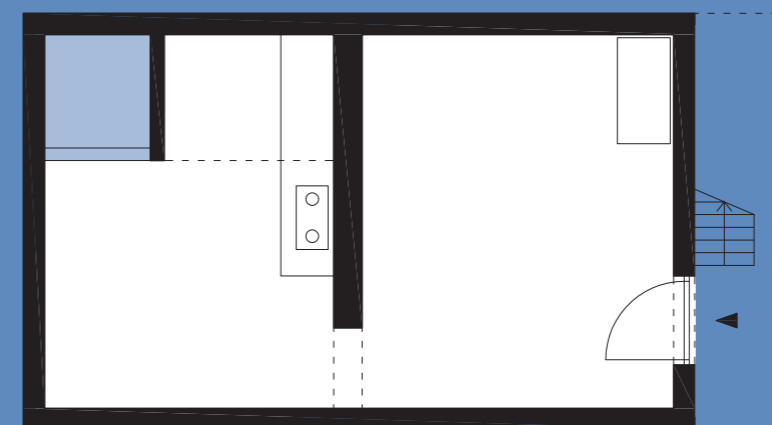


Plan before Shelter Associates' intervention

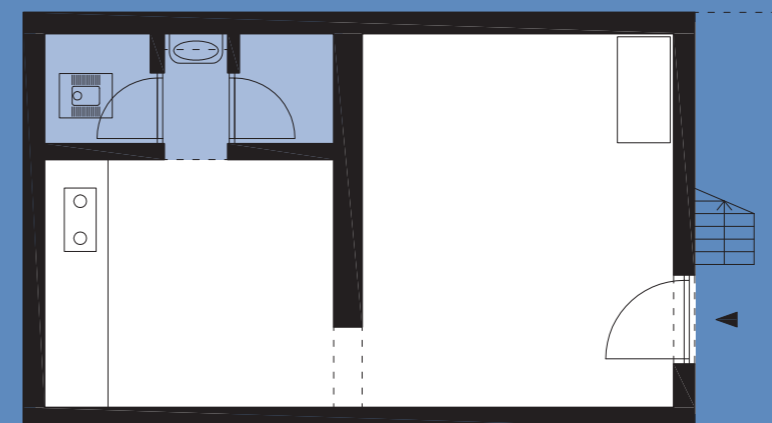


Plan after Shelter Associates' intervention

Illustration 4: In this house, the construction of the toilet was the starting point for the renovation of the whole house. The inhabitants replaced old wallpaper with brand new pink and orange ones. Moreover, the kitchen space is much more convenient to use after the construction of the combined toilet and bathroom.



Plan before Shelter Associates' intervention



Plan after Shelter Associates' intervention

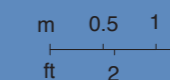


Illustration 5: This example shows the creativity of the inhabitants in the design process. This household decided to construct two separated spaces for the bathroom (on the right) and for the toilet (on the left). The two spaces are accessible from a space equipped with a small washing basin.

A small inventory: 37 houses of the settlement of Prem Nagar

In the form of a small inventory, all the houses measured are depicted below. They are classified according to their housing typology and are ordered by decreasing house area. Information is given for each house in the following order: Number of inhabitants/ House area/ percentage of the house which is occupied by the toilet and bathroom.

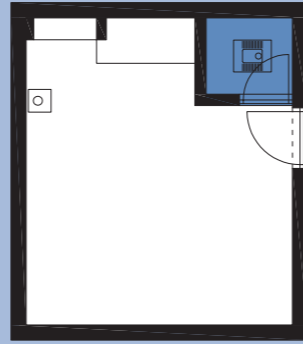
One room houses (13)

Depicted here are the houses that are organized in **one single room** and whose toilet has been constructed **near the street**, where the drainage line is laid. It is the most frequent solution in the case of a single room house.

7/ 200.2 sq ft (18.6 m²)/ 10.7 %



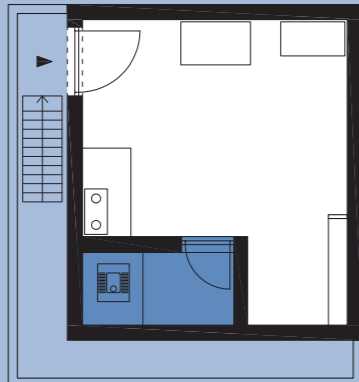
4/ 153.9 sq ft (14.3 m²)/ 10.5 %



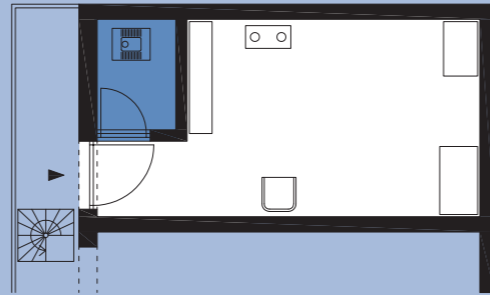
6/ 185.8 sq ft (14.2 m²)/ 15.5 %



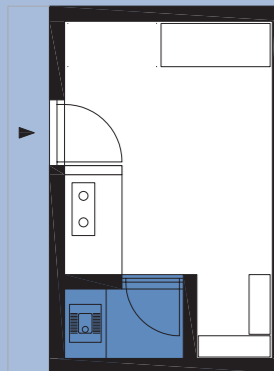
4/ 152.2 sq ft (14.1 m²)/ 18.4 %



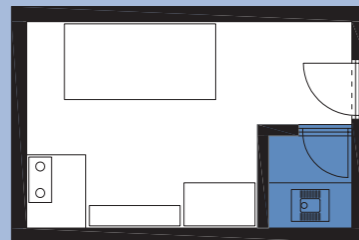
4/ 142.1 sq ft (13.2 m²)/ 14.5 %



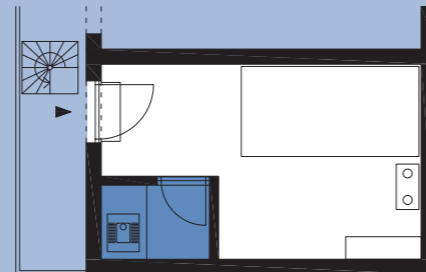
5/ 131.3 sq ft (12.2 m²)/ 15.6 %



5/ 125.9 sq ft (11.7 m²)/ 14.5 %



4/ 117.3 sq ft (10.9 m²)/ 15.6 %



7/ 114.1 sq ft (10.6 m²)/ 17.0 %



1/ 92.6 sq ft (8.6 m²)/ 26.7 %



3/ 87.2 sq ft (8.1 m²)/ 17.3 %



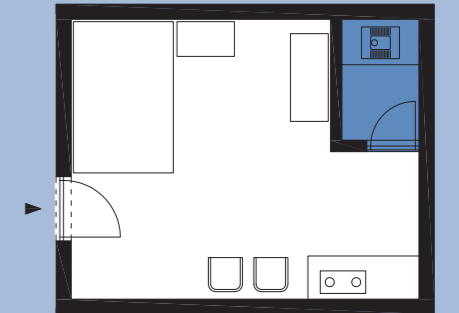
Here are the houses which are organized in **one single space**, with toilets **at the rear**.

In most cases, the combined toilet and bathroom is built where the bathroom was before. As stated above, inhabitants constructed the toilet near the street, where the drainage line is located; as the sewage pipe provided by Shelter Associates is only long enough to reach the front of the house, it makes the most economic sense for residents to build their toilets at the front of their homes, close to the sewage pipe. If a household wishes to construct a toilet in the rear of their home, extra pipes must be laid at the inhabitants' own cost.

4/ 135.6 sq ft (12.6 m²)/ 15.1 %



2/ 183.0 sq ft (17.0 m²)/ 12.3 %



Two story houses (3)

Only a small percentage of the houses measured have two stories.

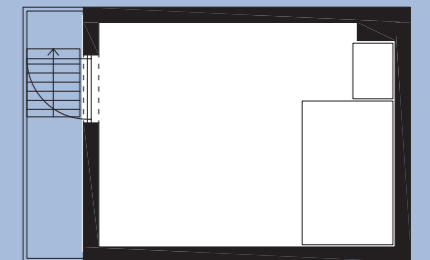
Here are the two cases in which the toilets were constructed on the ground floor of the house.

6/ 207.7 sq ft (19.3 m²)/ 12.6 %

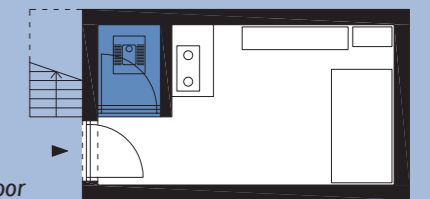


first floor

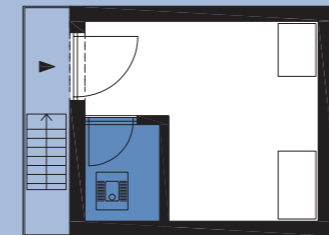
6/ 215.3 sq ft (20.0 m²)/ 6.0 %



ground floor

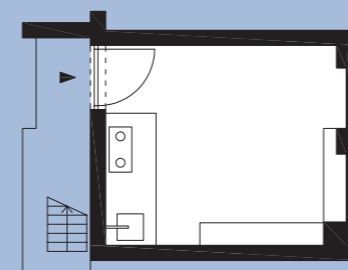


5/ 178.7 sq ft (16.6 m²)/ 9.6 %

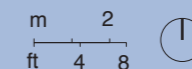


first floor

Here is the plan of the house whose toilet was built on the first floor.



ground floor



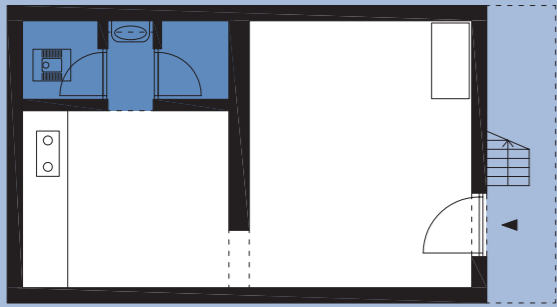
Note

- For the calculations, the house area - or living space - is defined as the whole area contained between the exterior walls.
- In order to calculate the percentage of the house which is occupied by the toilet and bathroom, the toilet partition walls - between the toilet and the rest of the house - are included as part of the toilet area.

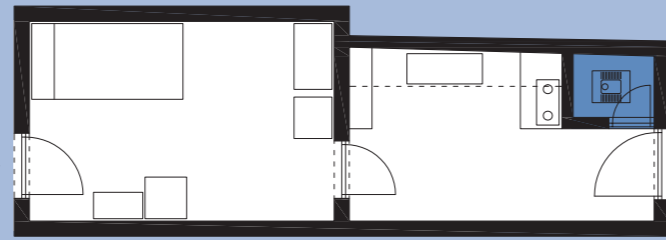
Two room houses (16)

Out of 37 houses, 16 houses were composed of **two rooms**, more or less clearly defined. Here are the houses in which the combined toilet and bathroom is located **at the back** of the house.

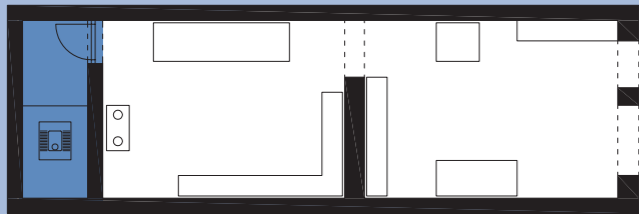
7/ 217.4 sq ft (20.2 m²)/ 16.3 %



5/ 213.1 sq ft (19.8 m²)/ 6 %



6/ 199.1 sq ft (18.5 m²)/ 13.5 %



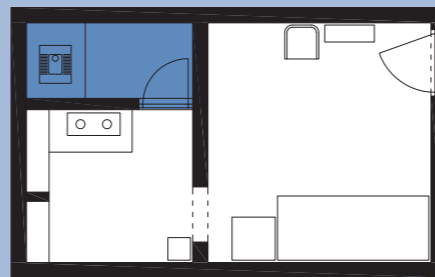
4/ 193.8 sq ft (18.0 m²)/ 15 %



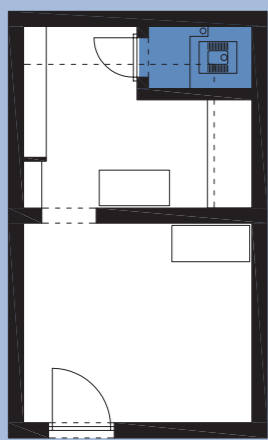
6/ 183.0 sq ft (17.0 m²)/ 14.7 %



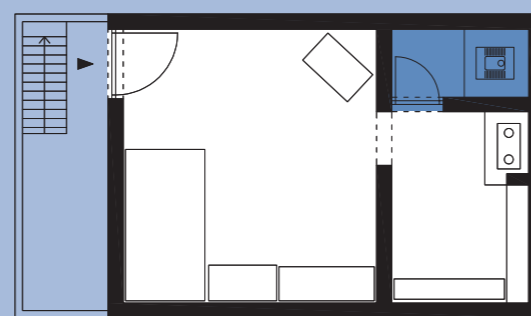
4/ 177.6 sq ft (16.5 m²)/ 13.9 %



8/ 170.1 sq ft (15.8 m²)/ 19.5 %



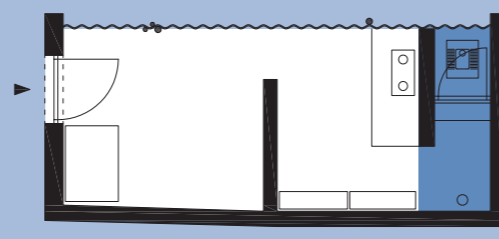
5/ 202.4 sq ft (18.8 m²)/ 10.6 %



3/ 143.2 sq ft (13.3 m²)/ 13.5 %



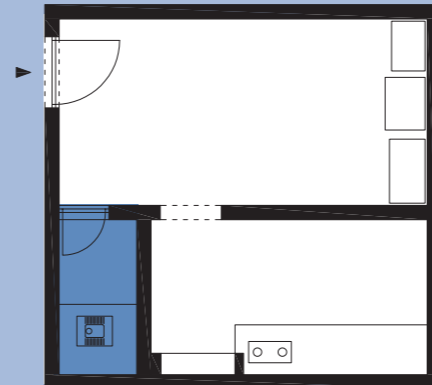
6/ 145.3 sq ft (13.5 m²)/ 17.0 %



In the houses below, the toilet has been built **in the front room**, near the street.

It is interesting to note that in the case of a one room house, the toilet was most frequently constructed near the street, whereas in the case of a two room house, the toilet is usually located in the back. No explanation has been found; it is in most cases due to the bathroom's former location.

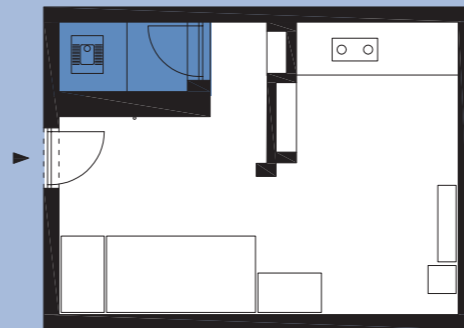
2/ 278.8 sq ft (25.9 m²)/ 12.0 %



5/ 276.6 sq ft (25.7 m²)/ 8.6 %



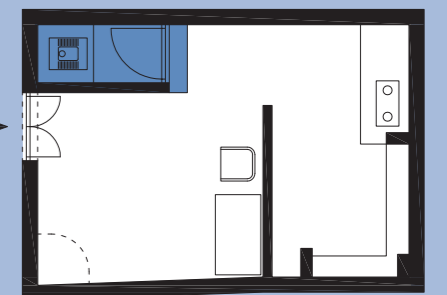
4/ 222.8 sq ft (20.7 m²)/ 12.1 %



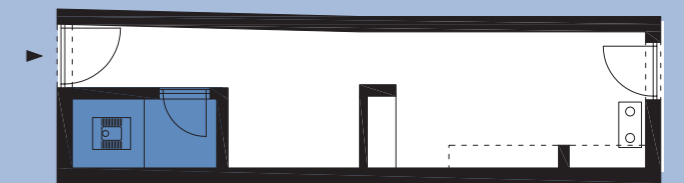
7/ 176.5 sq ft (16.4 m²)/ 15.2 %



2/ 175.5 sq ft (16.3 m²)/ 11.0 %



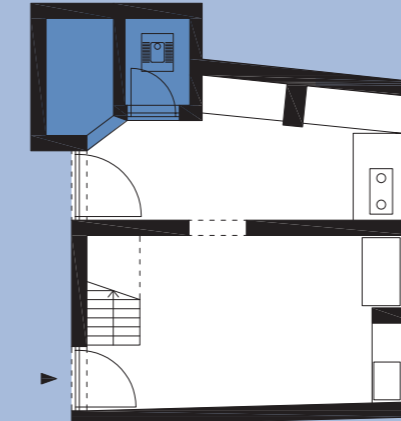
2/ 148.5 sq ft (15.9 m²)/ 13.8 %



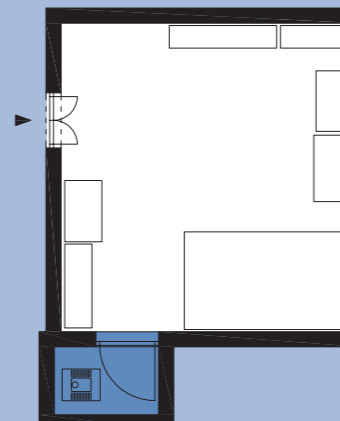
Others (5)

A few houses didn't fit into any of the previous categories. This is, for example, because the toilet was constructed outside of the house or because the house has two main entrances.

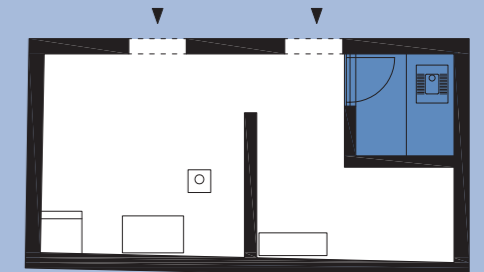
9/ 201.3 sq ft (18.7 m²)/ 13.9 %



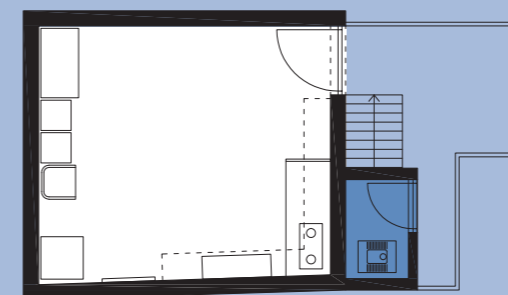
4/ 179.8 sq ft (16.7 m²)/ 9.6 %



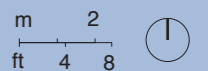
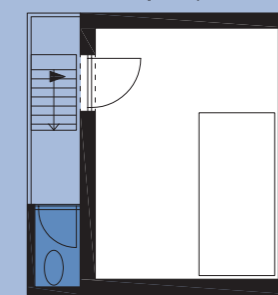
8/ 158.2 sq ft (14.7 m²)/ 15.0 %



4/ 140.0 sq ft (13.0 m²)/ N.A.



3/ 86.0 sq ft (8.0 m²)/ N.A.





From bathroom to combined toilet and bathroom. The process of housing improvements in Prem Nagar.

SANITATION



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