

# The MIMIC Mega Game

12-28 players

60 minutes game-time

45-60 minutes discussion

You will need:

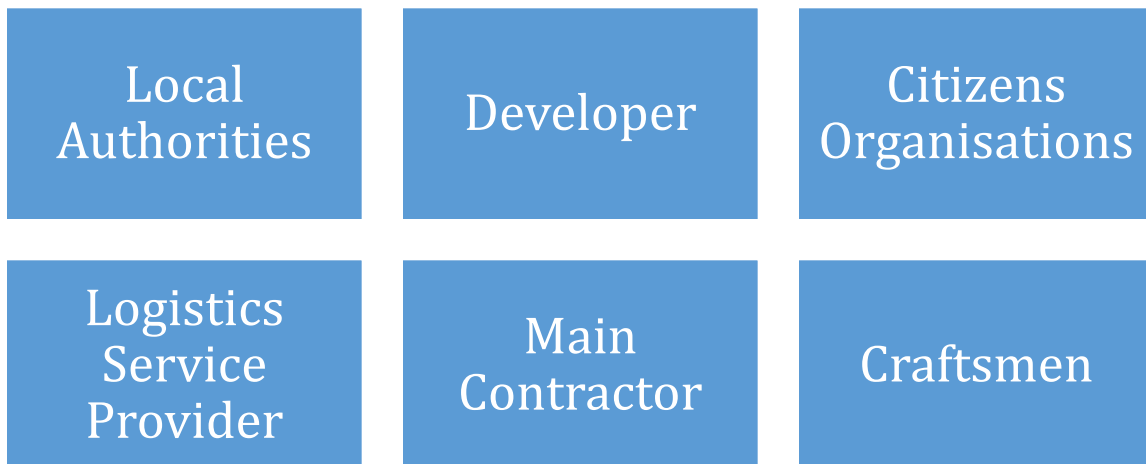
- This booklet
- Whiteboard and pens
- Timer

## Playing the game

In this game we will look at two fictional construction sites and the actors involved in the planning stage. One is an *Urban Development Project* and the other an *Infrastructure Development*, you choose which one you want to play with your group. Naturally, it is also possible to play both scenarios, such as before and after a course or workshop on the subject.

The participants will be divided into groups and portray the different actors involved in construction logistics, from craftsmen to the local authorities. The game can be played with 12-28 players, and will also require a gamemaster that leads the game. If you have 12 players there are two for each group (see below). If you have more, fill out as needed.

The roles are not individual, and the entire group will instead try to envision what it would be like to be in the group they are playing, attempting to understand group motivations.



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# Flow of the game

## Five phases

1. Introduction (15 minutes)
  - a. Divide into groups: *Local Authorities, Developer, Citizens Organisations, Craftsmen, Main Contractor* and *Logistics Service Provider*.
  - b. The Gamemaster reads the scenario introduction text and presents the selected scenario.
  - c. The players get their role cards
  - d. The Gamemaster explains what will happen in the game and displays the game's different phases.
2. Debate (10 minutes)
  - a. The players discuss the problems in the cases presented and how to handle construction logistics in their smaller groups and come up with a suggestion for the scenario.
3. Convergence (20 minutes)
  - a. The players converge in two larger groups; Group 1 is *Local authorities, Developer and Citizens Organisations/Local business*, Group 2 is *Craftsmen, Main Contractor and Logistics Service Provider/Supplier*. Group 1 makes a suggestion that Group 2 considers, and vice versa.
4. Presentation (10 minutes)
  - a. A spokesperson trades places and reads the other larger group's suggestion.
  - b. Discussion whether the presented solution is acceptable or not in the smaller groups.
  - c. The groups can reply yes or no, or that they cannot reach a consensus.
5. Consequences (5 minutes)
  - a. Every group presents the conclusion they have reached, and if they want to use their special action.
  - b. The Gamemaster picks up on and narrates the story - if a group uses their special action, what will the consequences be for the construction project?
  - c. The Gamemaster closes the game with the outro.



Figure 1: Kungsgatan Norrköping, Sweden, Photo:Thor Balkhed, LiU

## Postgame discussion (45-60 minutes)

Depending on the number of players it is possible to do this either in the smaller or the larger groups, or as a full group. Some questions might require a common presentation, since the players will have had a completely different experience depending on which group they were in.

### Questions for the participants:

- What happened in the different groups?
- What do you think will happen to this construction project in the future?
- How did you make decisions?
- Was there compromise in the larger groups?
- How realistic do you think this was?
- How did it feel to play group X?
- Did you feel like you had power over your situation?
- In what way? If not, why?
- What tools did you use to come to a decision?
- Did it feel like the special action gave your group some advantage?
- What would you have done in the same situation?
- Did it feel like you had enough knowledge on construction logistics to make decisions in the game?
- Were there things that were difficult to understand?

### Specific scenario questions:

#### *Urban development project*

- How are the possibilities to get all actors in all sub projects within the urban development projects to follow the decisions made?
- How will the unions react to the decision?
- Who is going to be responsible for information sharing, so all involved actors know how to act?
- Who is going to be responsible for following up rule adherence?
- Could the decision have been different?

#### *Infrastructure project*

- How are the decisions going to affect the traffic around the site?
- How are you going to communicate the decisions made to the general public?
- Who is going to be responsible for following up rule adherence?
- Could the decision have been different?

# Gamemastering the game

As Gamemaster you are the one that starts and ends the game, explains the rules and answers any questions, but you do not participate in any of the groups yourself. It is important to contextualize the game and the player's decisions, especially in the last phase (see below).

Facilitating the game usually takes significant concentration, so it helps if you are not responsible for meeting logistics as well. You will likely be in charge of the post-game discussion as well, but this could also be done by someone else.

## Preparation

- Read this booklet thoroughly
- Copy the necessary roles
- Make sure you have all necessary material for the game within reach

## During the game

- Read intro and outro
- Answer any questions
- Keep an eye on the time and inform the players when a phase is complete. Alert them at half time, and when there's just a few minutes left, so that all will be able to finish.

## After the game

- Gather any questions concerning the game from the players
- Lead the post-game discussion

## The special power

In the last stage each group is given the opportunity to use their "special power" if they feel that they are unsatisfied with the result, or how they have been treated during the discussions/negotiations. This is especially important, as it is what transforms this from a discussion exercise into a game, and highlights a central theme of the game: *cooperation isn't as easy as one might think*.

Special power summary:

Local authorities: force the issue through legislation	Developers: withholding payment from the contractor	Citizens organisations: complain and protest
Main contractor: increase prices or opt out of bidding altogether	Logistics service provider: delivery delays	Craftsmen: drag their heels

## Is this like acting in a play?

Instruct the players that they are to imagine the group's situation and act accordingly. They do not need to "act" in any way. There will be no audience, and everyone that is there participates equally except the Gamemaster.

The players and you as Gamemaster have plenty of power to determine what you'd like the game to be about. When it comes to improvising details about the projects, go right ahead - it doesn't matter if different groups have a slightly different view of the construction project and site - that is probably rather close to the truth!

Encourage the players to stay fairly close to reality. No-one would argue that it would be possible to stop all traffic to and from the site or that all deliveries should be by bike for example. If the participants don't know what it is really like, ask them to make decisions that they think are close to reality.

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## Prior knowledge

The game can be played by both players that have experience with construction logistics and by players that have little or none. It is primarily the post-game discussions that will be different. One advantage with playing with players that do not have this experience is that it can encourage curiosity, and they might keep looking for information afterwards. Perhaps the players have differing levels of experience, so that some have knowledge that others completely lack? That's probably what it looks like at a real-life construction site as well! Use this in the discussion. Did the experienced players have advantages?

If you feel that the players should have some prior knowledge, these topics can be useful:

- Construction production planning - what are the phases of a construction project and what different types of materials are needed in these phases?
- Traffic regulations - what are the rules for taking public space in use for unloading, what are the rules for heavy traffic in a city?
- Construction project management - what actors are involved in a construction project, on what basis are these usually tendered?
- Logistics management - what are common logistics activities?
- Transport externalities - what are typical nuisances caused by logistics on the surrounding community?

## Warm up

Before the game starts it can be useful to have the group do some warmup exercises. The following are examples of value-questions that you as a Gamemaster can pose. They are constructed as statements that the participants can agree to or not, by placing themselves on an imaginary line, where one end is "agrees completely" and the other "doesn't agree at all". Let the players speak with those closest to them on the line about why they chose their particular spot for about 30 seconds after each statement.

- I feel like I have a good grasp of the different construction logistics solutions that are out there.
- I know how the environmental and traffic regulations impact the construction logistics.
- I know how the construction unions feel regarding handing over logistics to other professional groups.
- I know how much time can be saved in a construction project with the help of improved logistics.
- I know that productivity levels can be gained by reducing transport trips and improved coordination.
- I believe that financial and environmental gains can be made by improving construction logistics.
- Possibly a statement of your own?

## Intro-text

Read this to the players before you begin play. It is also possible to skip this and come up with your own if it fits better, of course. The purpose is to set the mood and an interest in the game, ferrying the players into the fiction. Don't forget to also present the scenario.

*A construction logistics solution (CLS) is how logistics is organized in a project. It provides such values as decreasing number of transports, emissions and hazards for craftsmen (stumbling or be run over) as well as helps shortening the time for completion. Though, the more services included the higher costs. Examples of services are:*

- *construction logistics center (decreasing number of transports through consolidation)*
- *checkpoint (controlling the transport arrival times)*
- *unloading zones (controlling where transports stop)*
- *logistics-based site plans and materials handling (increasing safety for craftsmen)*
- *joint waste management (decreasing number of transports and increase circularity of materials)*
- *a planning system (coordinating all above services).*

## Outro-text

Read this as the game comes close to the end, or replace it with your own words. The purpose is to ferry the players out of the game and into the post-game discussion.

*And now we leave the development project. What actor got most of their wishes satisfied? Who will be the most reluctant? Or will everyone be happy? This the future will tell. Thank you for playing the construction logistics game.*

# Scenario 1: The Urban Development Project

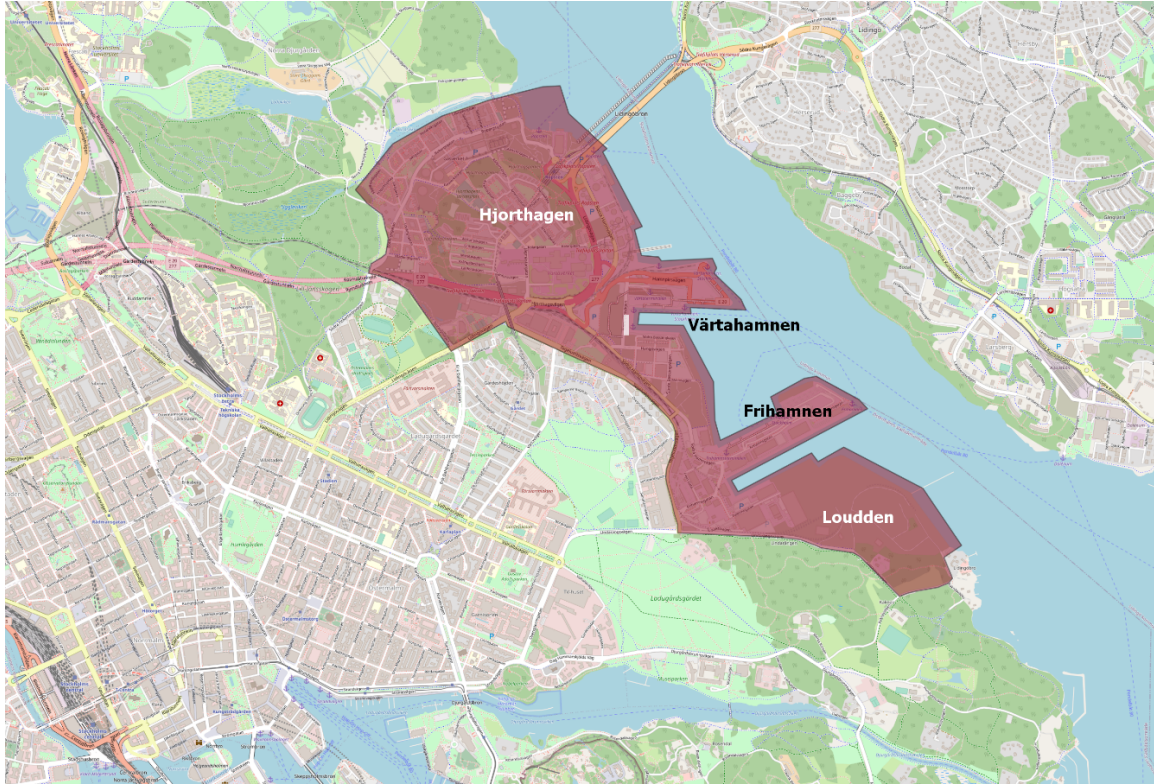


Figure 1 Stockholm Royal Seaport

In the Stockholm Royal Seaport 12 000 new homes (800 000 m<sup>2</sup>) and 35 000 new workplaces (600 000 m<sup>2</sup>) are to be built. Due to the location, with the Baltic Sea to the East and the national city park to the North, the heavy transports generated has to pass through Stockholm city center on its way forth and back to the area, increasing the pollution and congestion in the city center and creating safety hazards for people living and working in the vicinity. The project started in 2011 and it is predicted to be completed around 2030. This means that while construction is on-going in some parts, with several sites working close to each other and everyone building to the border of their lot leaving no space for material handling and unloading zones, in other parts new residents and companies will have already moved in. Thus, there will not only be commuters and inhabitants travelling forth and back, there will also be construction transports in the dense area increasing congestion and safety issues for the inhabitants. Construction transport is a major problem in a housebuilding project as it stands for about 10% of the total emissions. In this project, the transport problem is even larger this area is a former industrial area from which a lot of polluted earth masses must be removed from each lot before work can commence and thus the environmental impact of the construction transports is a problem for the whole urban area of Stockholm.

- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- How can we handle the site's waste management in the area?
- Who is going to pay for logistics management?



- How is project management going to avoid disturbing the people moving in and working in the area?
- How are we going to keep environmental impact from construction traffic and work to a minimum?

The players need to come up with a suggestion where the questions are answered. First in the smaller group, then in the larger groups. The larger groups will then decide if they want to agree to the other's proposal or not.

[space for project 1 overhead map and text “several copies of this map may be made and handed out to the players”]



Figure 2 Etapp Hjorthagen, Stockholm Royal Seaport

## Local Authorities role-card (Urban Development)

### **The Local Authorities**

The local authorities is the combination of affected functions, such as the city development office, the traffic planning office and the environmental office. The main goal is to safeguard the citizens demands and wellbeing, a safe and healthy environment. Do not really care about costs as long as they do not affect your budget.

*"We try to satisfy the common good and representing the citizens in a good way"*

### **Motivations**

- Decreasing the environmental impact of construction traffic.
- Decreasing the disturbances on citizens of construction traffic.
- Improving the city's reputation.

### **Fears**

- Citizens' complaints and protests
- That no one would like to build in their city
- That the reputation of their city will suffer

### **Special action**

If you're not satisfied with the proposed solution, you have the option of forcing the issue, by introducing more bureaucracy and legislation, which might make it more expensive to build.

In the Stockholm Royal Seaport 12 000 new homes (800 000 m<sup>2</sup>) and 35 000 new workplaces (600 000 m<sup>2</sup>) are to be built. Due to the location, with the Baltic Sea to the East and the national city park to the North, the heavy transports generated has to pass through Stockholm city center on its way forth and back to the area, increasing the pollution and congestion in the city center and creating safety hazards for people living and working in the vicinity. The project started in 2011 and it is predicted to be completed around 2030. This means that while construction is on-going in some parts, with several sites working close to each other and everyone building to the border of their lot leaving no space for material handling and unloading zones, in other parts new residents and companies will have already moved in. Thus, there will not only be commuters and inhabitants travelling forth and back, there will also be construction transports in the dense area increasing congestion and safety issues for the inhabitants. Construction transport is a major problem in a housebuilding project as it stands for about 10% of the total emissions. In this project, the transport problem is even larger this area is a former industrial area from which a lot of polluted earth masses must be removed from each lot before work can commence and thus the environmental impact of the construction transports is a problem for the whole urban area of Stockholm. The local authorities have the responsibility to ensure the safety of the citizens as well as to decrease the environmental impact.

- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- How can we handle the site's waste management in the area?
- Who is going to pay for logistics management?
- How is project management going to avoid disturbing the people moving in and working in the area?
- How are we going to keep environmental impact from construction traffic and work to a minimum?

## Developers role-card (Urban Development)

### **The Developer(s)**

You are the future property owners. You are the ones that invest money in the project(s) and also expect to make money by selling or renting out the property.

*"We need to finish as soon as possible and would like to have as happy future customers as possible"*

### **Motivations**

- See great advantages of a shorter construction time, how can utilise more hours of the day.
- As few disturbances to their customers as possible
- Improving their reputations as developers.

### **Fears**

- Delays due to complaints
- Delays due to problems during the construction
- Contractor bankruptcies

### **Special action**

If you feel that the contractors don't support you, you might be forced to withhold their payment.

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- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- How can we handle the site's waste management in the area?
- Who is going to pay for logistics management?
- How is project management going to avoid disturbing the people moving in and working in the area?

- How are we going to keep environmental impact from construction traffic and work to a minimum?

## Citizens Organisations role-card (Urban Development)

### **Citizens Organisations**

The citizen's organisations represent the citizens living nearby the construction site as well as local businesses. These can have different focuses such as representing bikers or parents to children in nearby schools.

*"Save lives and keep a healthy and safe environment and an attractive business climate"*

#### **Motivations**

- Increase safety of pedestrians and bicyclists
- Decrease environmental impact
- Decrease noise levels in evenings

#### **Fears**

- The combination of kids and trucks
- Bicyclists are forced into the street
- Lowered property values due to disturbances

#### **Special action**

If you feel that your voices haven't been heard and fears gone unaddressed, you are always able to organise protest and complaints against the project.

In the Stockholm Royal Seaport 12 000 new homes (800 000 m<sup>2</sup>) and 35 000 new workplaces (600 000 m<sup>2</sup>) are to be built. Due to the location, with the Baltic Sea to the East and the national city park to the North, the heavy transports generated has to pass through Stockholm city center on its way forth and back to the area, increasing the pollution and congestion in the city center and creating safety hazards for people living and working in the vicinity. The project started in 2011 and it is predicted to be completed around 2030. This means that while construction is on-going in some parts, with several sites working close to each other and everyone building to the border of their lot leaving no space for material handling and unloading zones, in other parts new residents and companies will have already moved in. Thus, there will not only be commuters and inhabitants travelling forth and back, there will also be construction transports in the dense area increasing congestion and safety issues for the inhabitants. Construction transport is a major problem in a housebuilding project as it stands for about 10% of the total emissions. In this project, the transport problem is even larger this area is a former industrial area from which a lot of polluted earth masses must be removed from each lot before work can commence and thus the environmental impact of the construction transports is a problem for the whole urban area of Stockholm.

There is a risk that the construction transports will be routed so it crosses the children's way to school or that materials that are health hazards are handled close to the homes.

- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- How can we handle the site's waste management in the area?

- Who is going to pay for logistics management?
- How is project management going to avoid disturbing the people moving in and working in the area?
- How are we going to keep environmental impact from construction traffic and work to a minimum?

## Craftsmen role-card (Urban Development)

### Craftsmen

You are the ones working in the construction sites. Your working environment is affected by how the logistics is organised but also their work tasks. Their union is strong and is not in favor of change.

*"Do not add extra work tasks and do not affect our salary"*

### Motivations

- A safer working environment by less trucks and materials on site
- To be able to do what they're there for
- Reduced stress

### Fears

- Other types of workers taking their jobs
- Decreased piece rate/pay per day
- Being forced to adopt new work habits

### Special action

They may be able to lay down all sorts of new directives, but if they want you to jump through too many hoops, well, you don't have to make an effort to follow them, now do you?

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- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
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## Main Contractor role-card (Urban Development)

### **Main Contractor**

You organise the work and are responsible for coordinating work between different actors. You would like to be able to do as you like and what is best for their individual site. Doesn't like to adapt to other projects and new rules.

*"We don't want a lot extra administration and coordination, let us do as we has always done"*

### **Motivations**

- Increased worker productivity
- Increased site safety
- Decreased logistics' costs

### **Fears**

- Construction delays due to missing materials
- Worker complaints
- Costly extra work due to logistics problems

### **Special action**

If all these newfangled methods require too much adaptation from our side, we'll be forced to increase prices or not take part in the bidding.

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- How are we going to keep environmental impact from construction traffic and work to a minimum?

## Logistics service provider role-card (Urban Development)

### **Logistics Service Provider /Suppliers**

You are responsible for running the construction logistics solution, acting as a systems coordinator through a planning system. You hire new workers doing the logistics work and are responsible for making sure that rules are abided by.

*"Make us a central actor so we have the power to accomplish change among the contractors"*

#### **Motivations**

- Make money through high resource utilisation
- Sell service to further projects
- Increased company reputation

#### **Fears**

- Not have the power to implement logistics services
- Not get paid and not meeting set goals due to changed planning or unplanned deliveries
- Being blamed if something goes wrong with the logistics

#### **Special action**

If you feel that the solution ends up too different from how you'd like it, there will be unfortunate delivery delays.

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can commence and thus the environmental impact of the construction transports is a problem for the whole urban area of Stockholm.

The many ongoing simultaneous projects implies there are many different actors that need to be coordinated, which can be very complicated unless the third-party logistics provider have the organizational power to force compliance to actions.

- How will construction companies manage their materials when they are building in these very confined lots?
- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- How can we handle the site's waste management in the area?
- Who is going to pay for logistics management?
- How is project management going to avoid disturbing the people moving in and working in the area?
- How are we going to keep environmental impact from construction traffic and work to a minimum?

## Scenario 2: The infrastructure project



Figure 1: Tram line extension project

The extension of Tramline 94, initiated by the Ministry of Brussels, consists of the renovation of the Woluwedal, extending the tram tracks by 2 km and a cyclo-pedestrian promenade will be created between the park area and the tram tracks. Tram tracks will be integrated into the parks. The tracks will be covered with grass, thus creating a green zone enhancing the landscape aspect of the Woluwe Valley. The two road traffic lanes will be maintained in both directions but narrowed to contribute to comply with the 30 km/h speed limit which will contribute to congestion and prolonged travel times for the drivers.. The parking lane will be also maintained in length, but reduced in width and this will limit the parking possibilities in the vicinity of the project decreasing the possibilities to reach shops and cafés. The project has a duration of approx. 2.5 years. Due to the long project time, the tramline will continue to run which will make the construction work more complicated and limit the possibilities for unloading and storing materials at the worksite. The 95.000m<sup>2</sup> construction area is located on the border of two municipalities (Woluwe) to the east of the Brussels city center. This very central location mean that the construction transport has to travel forth and back through the whole of Brussels and thereby contribute to congestion and increased emissions in the urban area. Furthermore, that it is located on the border of two municipalities is a problem in Belgium as these two municipalities has different policies and rules they consider the project to follow. The project is also located very close to the crossing used by schoolchildren moving forth and back from the school.

- How will construction companies manage their materials when they are building in these very confined lots?
  - How much materials are to be stored on site?
  - How are we going to coordinate unloading sites between projects?

- Where are the construction establishment (worker locker and lunch room, project management offices and tool shed) to be located?
- Who is going to pay for logistics management?
- How is project management going to avoid disturbing the people moving in and working in the area?
- How are we going to keep environmental impact from construction traffic and work to a minimum?
  - How can we decrease the number of transports?
  - How can we utilize the waterway or alternative transport modes?
  - Can we move some activities of site and use more prefabricated?

The players need to come up with a suggestion where the questions are answered. First in the smaller group, then in the larger groups. The larger groups will then decide if they want to agree to the other's proposal or not.

[space for project 2 overhead map and text “several copies of this map may be made and handed out to the players”]

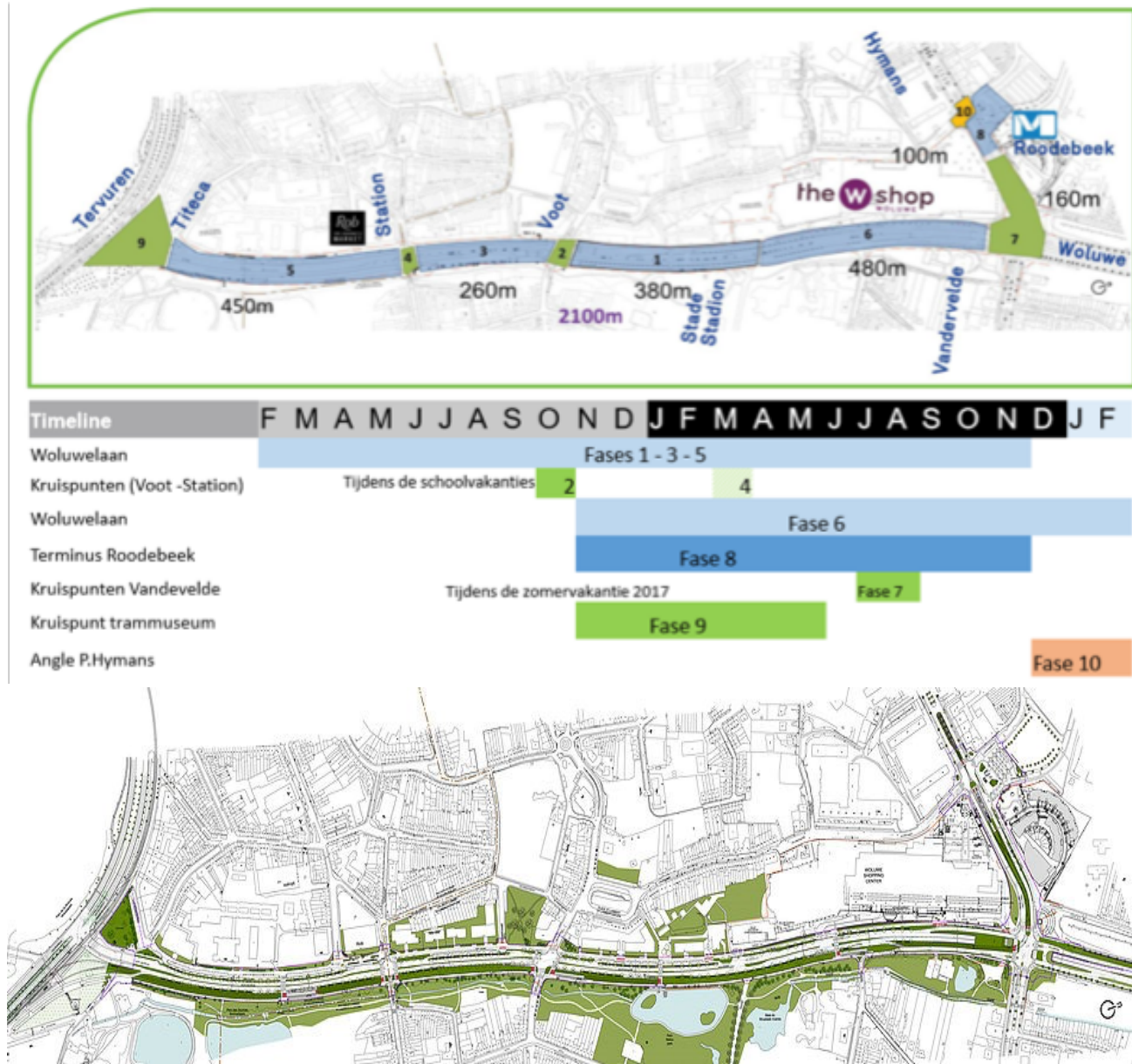


Figure 2: area of the projects within Brussels

## Local Authorities role-card (Infrastructure project)

### **The Local Authorities**

The local authorities is the combination of affected functions, such as the city development office, the traffic planning office and the environmental office. The main goal is to safeguard the citizens demands and wellbeing, a safe and healthy environment. Do not really care about costs as long as they do not affect your budget.

*"We try to satisfy the common good and representing the citizens in a good way"*

### **Motivations**

- Decreasing the environmental impact of construction traffic.
- Decreasing the disturbances on citizens of construction traffic.
- Improving the city's reputation.

### **Fears**

- Citizens' complaints and protests
- That no one would like to build in their city
- That the reputation of their city will suffer

### **Special action**

If you're not satisfied with the proposed solution, you have the option of forcing the issue, by introducing more bureaucracy and legislation, which might make it more expensive to build.

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## Developers role-card (Infrastructure project)

### **The Developer(s)**

You are the future property owners. You are the ones that invest money in the project(s) and also expect to make money by selling or renting out the property.

*"We need to finish as soon as possible and would like to have as happy future customers as possible"*

### **Motivations**

- See great advantages of a shorter construction time, how can utilise more hours of the day.
- As few disturbances to their customers as possible
- Improving their reputations as developers.

### **Fears**

- Delays due to complaints
- Delays due to problems during the construction
- Contractor bankruptcies

### **Special action**

If you feel that the contractors don't support you, you might be forced to withhold their payment.

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## Citizens organisations role-card (Infrastructure project)

### **Citizens Organisations**

The citizen's organisations represent the citizens living nearby the construction site as well as local businesses. These can have different focuses such as representing bikers or parents to children in nearby schools.

*"Save lives and keep a healthy and safe environment and an attractive business climate"*

### **Motivations**

- Increase safety of pedestrians and bicyclists
- Decrease environmental impact
- Decrease noise levels in evenings

### **Fears**

- The combination of kids and trucks
- Bicyclists are forced into the street
- Lowered property values due to disturbances

### **Special action**

If you feel that your voices haven't been heard and fears gone unaddressed, you are always able to organise protest and complaints against the project.

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## Craftsmen role-card (Infrastructure project)

### **Craftsmen**

You are the ones working in the construction sites. Your working environment is affected by how the logistics is organised but also their work tasks. Their union is strong and is not in favor of change.

*"Do not add extra work tasks and do not affect our salary"*

### **Motivations**

- A safer working environment by less trucks and materials on site
- To be able to do what they're there for
- Reduced stress

### **Fears**

- Other types of workers taking their jobs
- Decreased piece rate/pay per day
- Being forced to adopt new work habits

### **Special action**

They may be able to lay down all sorts of new directives, but if they want you to jump through too many hoops, well, you don't have to make an effort to follow them, now do you?

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## Main contractor role-card (Infrastructure project)

### Main Contractor

You organise the work and are responsible for coordinating work between different actors. You would like to be able to do as you like and what is best for their individual site. Doesn't like to adapt to other projects and new rules.

*"We don't want a lot extra administration and coordination, let us do as we has always done"*

### Motivations

- Increased worker productivity
- Increased site safety
- Decreased logistics' costs

### Fears

- Construction delays due to missing materials
- Worker complaints
- Costly extra work due to logistics problems

### Special action

If all these newfangled methods require too much adaptation from our side, we'll be forced to increase prices or not take part in the bidding.

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## Logistics service provider role-card (Infrastructure project)

### **Logistics Service Provider /Suppliers**

You are responsible for running the construction logistics solution. You hire new workers doing the logistics work and are responsible for making sure that rules are abided by.

*"Make us a central actor so we have the power to accomplish change among the contractors"*

#### **Motivations**

- Make money through high resource utilisation
- Sell service to further projects
- Increased company reputation

#### **Fears**

- Not have the power to implement logistics services
- Not get paid and not meeting set goals due to changed planning or unplanned deliveries
- Being blamed if something goes wrong with the logistics

#### **Special action**

If you feel that the solution ends up too different from how you'd like it, there will be unfortunate delivery delays.

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