

# Unfolding of A Community from a Generative Code

## The Riverside Community of Strood

*Version 19 Dec 2, 2005*

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*Bird's eye view of the result of this unfolding, as we currently envisage it, looking south towards the Medway,*

# Introduction

In the United Kingdom, the policy of the labour government, to rebuild massive amounts of housing, has a positive side, and a negative side. To the extent that new houses are genuinely needed, it is vital that they should be built, and the decision to rebuild on so-called brownfield sites is constructive.

However, the policy has recently come under growing, and sharp criticism, for a number of reasons, namely:

- The policy has run rough shod over the long standing tradition of caring for England as a precious landscape, and the role of planners in helping to protect this precious structure has been seriously undermined.
- People and their communities have been damaged, and some people forced to evacuate or leave places where they have lived for years.
- The policy has encouraged some rampant commercialism, and given leave to developers to ignore important inputs. The requirement of local involvement by the community has, so far, suffered far too much from tokenism. [“Local involvement” is the buzzword ODPM uses.]
- There is, in addition, a scepticism voiced by many that the need has been exaggerated, and focussed too much in the south, without exploring real housing and economic opportunities in the north. Originally a figure of 700,000 in the south of England was mentioned. Recent press releases have mentioned the figure of 4 million new houses.
- There is a deeper question about whether the tools exist, in the current design and construction system, to create places that have anything like the necessary level of qualitative character, namely: places that people will love, and care for, and build upon, and find truly suitable homes for a thriving community life and culture.

We have undertaken this work at Strood, in the hope that we may demonstrate the following:

- The meaning of genuine local involvement, where people do have a chance to qualitatively experience, then influence, and feel that they have influenced, the places that are being created.
- A modification of the “pure housing” policy emphasis, and greater acceptance of mixed use as fundamental, and achievable.
- What it means to protect, genuinely, the beauty of a landscape, so that the whole area is genuinely enhanced by the act of development, not further destroyed by extravagant works of giant art, or by mindless development processes.

- That it is possible to build real community, and a feeling of belonging, on the part of the new households, in a way that responds to the necessary qualitative aspects of a sustainable community.

This work requires a new methodology that builds on the qualitative evaluations of users, and generates a design that “unfolds” throughout the process of design and construction. It does so in the way that the most enduring and “sustainable” traditional towns and cities have done for millennia, but in a modern technological context. It uses a kind of “code” – not rigidly form-based, but based rather upon the sequence of steps taken by its participants, in “open source” fashion – to generate more adaptive forms. It is a highly advanced, 21<sup>st</sup>-century technology, not previously available.

# Preface

The work presented in this report was done by the Strood Riverside Workgroup, a project team of the Centre for Environmental Structure - Europe. It started with a three-day workshop given to professionals, officers of local authorities, students and community leaders, starting in London on September 13, and continuing in Strood itself on September 14-15. The purpose of our work was three-fold:

**First:** To examine the possibilities and analyse best practice issues, in outline form, for housing development on the Strood Riverside site.

**Second:** To give workshop attendees a broad overview of newly introduced technique of development, known as Generative Codes. The purpose of these generative codes is to provide a possibility of a more organic and more humanitarian form of development, and better architecture, which holds precious the people of the community and the land of the community. It is believed that this new technique has the power to make substantial improvements in construction of new neighborhoods.

**Third:** As a third purpose, it was also our intention to create the possibility of a landmark project, dealing with brownfield sites in a new way that is more vigorous than recent efforts have been, and follows the will, intent, and inspiration of the brownfield site proposals put forward by Deputy Prime Minister John Prescott. We believe that such a project could indeed be more inspiring for the people who work and live in the vicinity, and for the local authorities who support it; and that it could serve as a model for more beautiful, more humane, and truly more sustainable development in the Thames Gateway

# A Generative Code for the Riverside Community of Strood

The generative code which follows is intended as a pilot which may give us a first step towards providing a new way of building communities, and providing large numbers of houses in an integrated work and small business setting. Such a

process, we believe, is necessary to adapt to the real needs of people, the requirements of a truly sustainable neighbourhood, and the protection of the land of England for future generations.

# People Come First

The aim and purpose of this code is easy to define. The project generated by the code is meant to satisfy the people who live and work there, deeply.

This seems sensible enough. Yet in contemporary planning and development practice, far too little attention is paid to people as real people, and the real patterns of their lives, in all their rich complexity. Our purpose is to achieve what has, by now, become almost unthinkable: to allow formation of a community in which people who live there are genuinely at home -- where they can be well, happy, sad, ordinary, and joyful.

Such a process is not intended to create a place whose form is exciting to architects, or whose profits are exciting to developers, or whose numbers of housing units are exciting to government planners. These are the very sorts of specialist concerns that have proven disastrous again and again in the past.

Rather, this process is intended to create a rich qualitative environment, of precisely the sort that has proven itself sustainable in the past. It is intended to construct a fabric of businesses, jobs, place, local economy, interwoven with families and houses and the beauty of the place. It is not to be defined by someone else. It is to be defined by them.

To do this, the “generative code” discussed here exploits the latest insights from complexity science, from biology, and from human sciences, about the way stable forms are generated, and emerge over time, from the participation of people. We now understand that we cannot generate successful forms from a “template” or from quantitative dictates. The form has to grow through a complex process over time.

At the core of this process is a generative “cycle of unfolding”. It is a cluster of steps taken to articulate the form gradually, in response to quantitative and qualitative factors as they change over time, emerging and developing further at each step. It is much closer to the process of morphogenesis in biology, than it is to the relatively crude methods of planning and assembly rooted in the twentieth century.

As such, this approach is by no means an attempt to reproduce features of a past world. Nothing about the result that may seem “old-fashioned” is intended to be that way for its own sake. Rather, in such a process, certain universal forms will recur, just as they do in nature. But they will always have many unique local features.

This is a vision of a living world that replaces the current fantasy of how we must live in a technological future – a fantasy as surely as any chocolate-box nostalgia. It is a

RECONSTRUCTED SEQUENCE OF UNFOLDING

new vision of a world of structures that are genuinely emergent from the needs of people, and the land they live on.

In that very real sense, this approach is much more “modern” than the failed one it seeks to replace.

# Pre-Research and Planning the Code

In any given project, a great deal of time will necessarily be spent at the beginning, researching the area, understanding the proposed programme, analyzing sociological and economic information, interviewing people, gathering up ecological data and all the issues to be addressed.

There are a number of methodologies by which this can be done, and the information can be integrated into the Code; but they are beyond the scope of this discussion. (The “pattern language” process we have developed functions as one such methodology. See e.g. xxx)

Once this is done, and once the working group is identified (always including local participants), the first key task is to plan the development of the code itself. In the case of the Strood Riverside Workgroup, this was done in the form of a Workbook (see “Creating Generative Code for a New Neighborhood of Houses in Strood”).

## **The Cycle of Unfolding and Approximation**

The major element of the process is a “cycle of unfolding and approximation”, a major iterative design sequence. Within each of these cycles, specific steps are taken on different components, following a stepwise process of “identification-diagnosis-prescription-evaluation-modification”

The approximation is not a vague or wasteful aspect of the process: it is essential to its success. Like “fuzzy logic,” such a process actually yields more accurate results more quickly, because it maintains adaptive flexibility for as long as possible.

The number and kinds of cycle will vary for different projects, depending upon their nature and complexity. In the process of developing this Workbook for Strood Riverside, we identified five cycles that would be taken for the initial phase of the Code:

- |                              |   |
|------------------------------|---|
| <b>1<sup>st</sup> Cycle:</b> | Broad diagnosis of large-scale site structure, connectivity, and rough programme. |
|------------------------------|---|

RECONSTRUCTED SEQUENCE OF UNFOLDING

- 2<sup>nd</sup> Cycle:** Fine-grained diagnosis of detailed site structure, existing homes and businesses, existing public spaces and amenities, connective features, views, important areas.
- 3<sup>rd</sup> Cycle:** Rough layout of the new structures and open spaces, adapting to the existing conditions.
- 4<sup>th</sup> Cycle:** Slightly more detailed layout of streets, paths, public structures, connections to and between existing amenities.
- 5<sup>th</sup> Cycle:** Individual articulation of spaces, homes, gardens, and finer details.

The cycles will continue, beginning with these initial ones, through the construction, repair and maintenance of the parts of the neighborhood. Again, a number of tools are available to transmit the initial design information through the subsequent stages, including evolutionary pattern languages.

# The Strood

## Code-Generation

## Workbook

In the case of the Strood workbook, we sequenced the writing of the code as follows. It is important to understand that the grouping into the five cycles emerged as a result of this process, and they are presented here only as a convenient framework after the fact. This sort of emergent organization, unique to each project and each site, is a key feature of such a process.

- |                              |  |
|------------------------------|--|
| <b>1<sup>st</sup> Cycle:</b> | <i>Broad diagnosis of large-scale site structure, connectivity, and rough programme.</i><br><b>Site diagnosis:</b> finding special places on the site; Beautiful views; Natural ways in and out; <b>Density Calculations:</b> range of house sizes, percentage of pedestrian land, green land, building footprints and cars;   |
| <b>2<sup>nd</sup> Cycle:</b> | <i>Fine-grained diagnosis of detailed site structure, existing homes and businesses, existing public spaces and amenities, connective features, views, important areas.</i><br><b>Formation of large-scale positive space:</b> contained space; looking out; chains of space – enclosure of space and degrees of enclosure;  |
| <b>3<sup>rd</sup> Cycle:</b> | <i>Rough layout of the new structures and open spaces, adapting to the existing conditions.</i><br><b>Rough positions of building footprints:</b> rough arrangements of rows of housing, surrounding chains of positive space, and modification of positions of housing rows to improve views and the positive quality of exterior connected space; <b>Use GPS or Total-Station Surveying to read positions of stakes marking proposed building edges;</b> Preliminary calculations of number of dwellings using basic assumptions |
| <b>4<sup>th</sup> Cycle:</b> | <i>Slightly more detailed layout of streets, paths, public structures, connections to and between existing amenities.</i><br><b>Parking Calculation and Positions:</b> Calculate and place the total area of parking needed for the neighborhood, in relatively small lumps, located in the least pleasant places; <b>Pedestrian Connectivity:</b> Main pedestrian lines of movement; Put in pedestrian paths from each parking lot to the houses it serves; <b>Loops, gaps, and cross paths:</b> make sure there are many         |

pedestrian loops; **Second Level Positive Space:** Start searching for positive spaces at the local level; Identify breaks in the row house footprints; Subdivide rows crosswise to form rough house-volumes; **Enrich The Pedestrian Network in the Neighborhood:** Locate the small spots and functional centers which are nice to walk towards; **Emergency Vehicles:** Verify access for fire vehicles, construction vehicles, and other emergency vehicles, on the pedestrian paths

**5<sup>th</sup> Cycle:**

**Parking calculations and positions: calculate  
*Individual articulation of spaces, homes, gardens, and finer details.***

**Settle The Positions Of Individual Houses:** Draw final boundaries, marking the position of individual houses; Get sizes right, variation where needed by gradients, and allow gradients to be formed by variation of height; **Encourage Families To Plan Their Individual Houses:** Identify those families who wish to lay out their own house; **A Family Plans Their Individual House:** Family members decide the position and scope of the garden or terrace they want; They fix the position of entrance and living room in the places they most like; Placing minor rooms and completing floor plan; Placing windows

**It should be noted that among these many steps of generative code that are brought into play during unfolding, the repeated creation, shaping and refinement of positive space, and the successful achievement of a coherent system of positive space, everywhere and at all scales, is the most decisive aspect of the detailed generative code and the one which will ultimately have the greatest positive impact on the success of the neighborhood as a human settlement.** This topic is described in full, elsewhere.<sup>1</sup>

# The Sequence of Unfolding Provided by the Code



*Aerial photo of Strood riverside. The red outline depicts the site earmarked by Medway council for development*

**The following five cycles of decision steps provide successive approximations to a correct unfolding for overall regeneration of this site. If these steps are done correctly, as we envisage the process, it will ensure full participation by the existing and new members of this community, and will focus, we believe, on a very strong sense of ownership for all residents and owners in the area.**

#### **First cycle of unfolding and approximation**

1. Physical context of the neighborhood, aerial photograph, and site boundary.
2. Structures which will be preserved, including ugly public housing (that urgently needs to be repaired), the railway station, and the tavern, a prominent and successful meeting place.
3. Precious places, and beautiful views which should be enhanced.
4. Promenade along the water
5. Points of connection to next-door neighborhoods which must be strengthened
6. Possible types of housing and typical layouts to benefit from river view
7. Calculation of number of dwellings
8. Calculation of total parking needed

#### **Second cycle of unfolding and approximation**

9. Rough extent of overall pedestrian precinct
10. Diagnosis of public housing
11. Creation of a common green, with enlarged openings
12. Construction of new houses to connect and integrate with public housing
13. View axis of Rochester from the site
14. Three main tree lined avenues
15. Existing businesses to be preserved, and married into the housing buildings
16. Enhancement of needed links to next-door neighborhoods

#### **Third cycle of unfolding and approximation**

17. Identify the remaining available sites

18. Place new house groups to form positive space around open gardens
19. Place a green or garden inside each space formed by the positive space of one of these house groups

**Fourth cycle of unfolding and approximation**

20. Enlarge the railway bridge by the station to take traffic
21. The path to the green park high above the site
22. The first crossing paths connecting with the next neighborhood
23. Division of houses to allow further crossing paths and loops
24. Car roads, large and small, between the pedestrian ways
25. Parking distribution in small parking lots and narrow parking lanes towards the edge
26. Further house groups filling out the space around existing businesses
27. A neighborhood town hall
28. A public walkway above the mud

**Fifth cycle of unfolding and approximation**

29. Embellishment around the dock
30. Adding greens for remaining houses groups
31. Subdivision of house buildings into lengths
32. Shaping local positive space
33. Families choose and stake out terraces and front gardens
34. Locating the entrance and the living room of each house
35. Full layout of interior
36. Placing and sizing windows by the family

In the next pages we shall go through these steps, one by one, and see how the whole unfolds from the action of these steps.

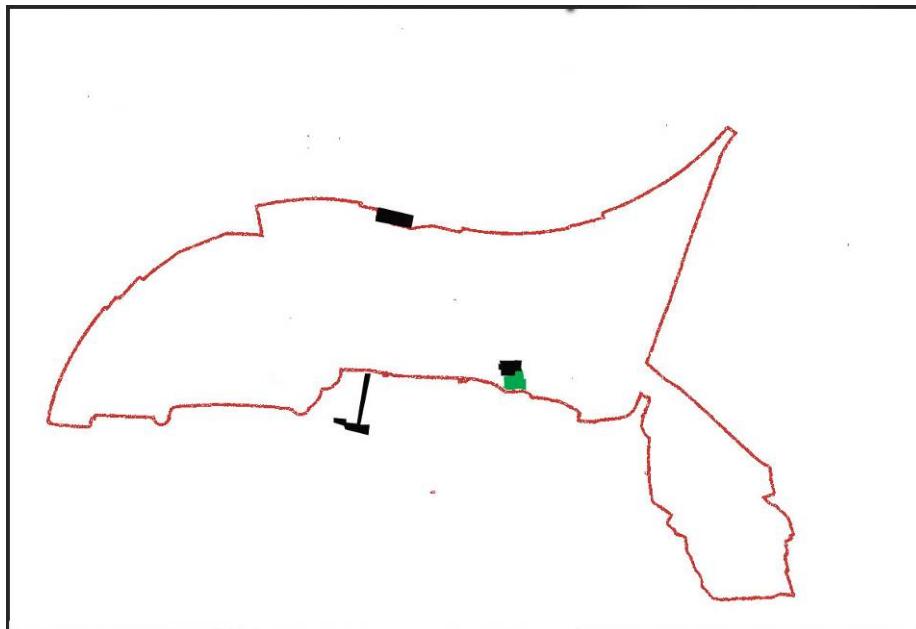
## **FIRST CYCLE OF UNFOLDING**

### Overall diagnosis, fixed points, and broad structure

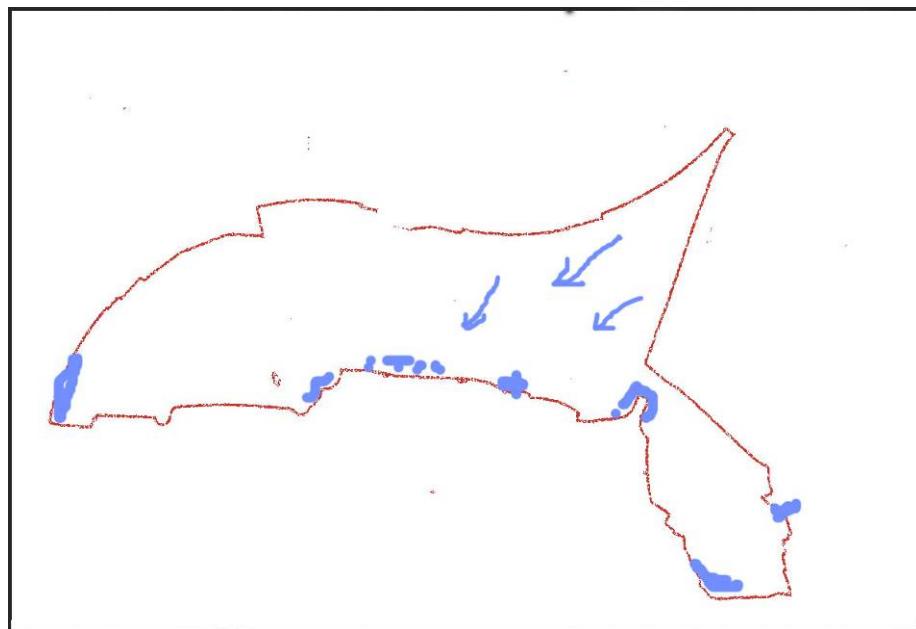
1. Physical context of the neighborhood, aerial photograph, and site boundary.



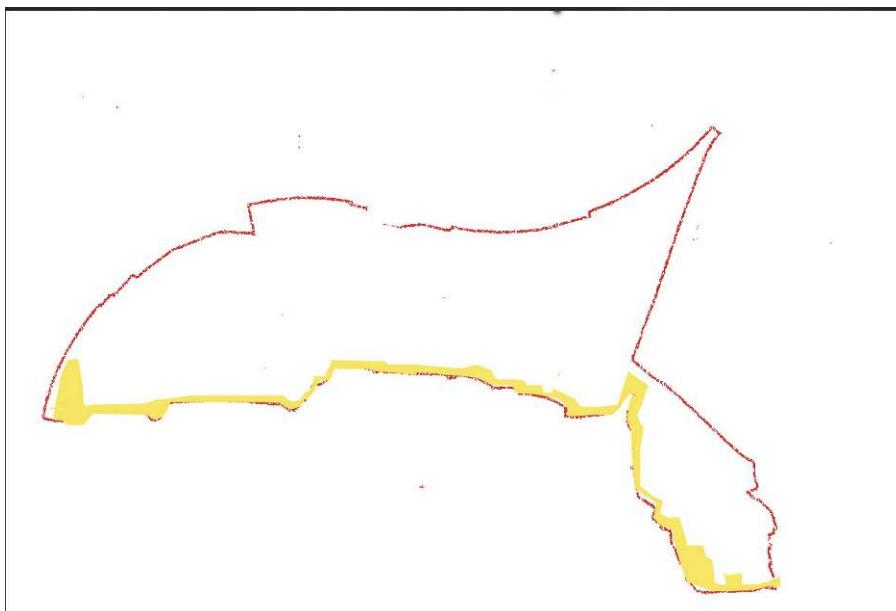
2. Structures which will be preserved, including ugly public housing (for partial preservation, but that urgently needs to be repaired), the railway station, and the tavern(a prominent and successful meeting place).



3. Precious places, and beautiful views which are an important part of the land, and which must be protected and enhanced.

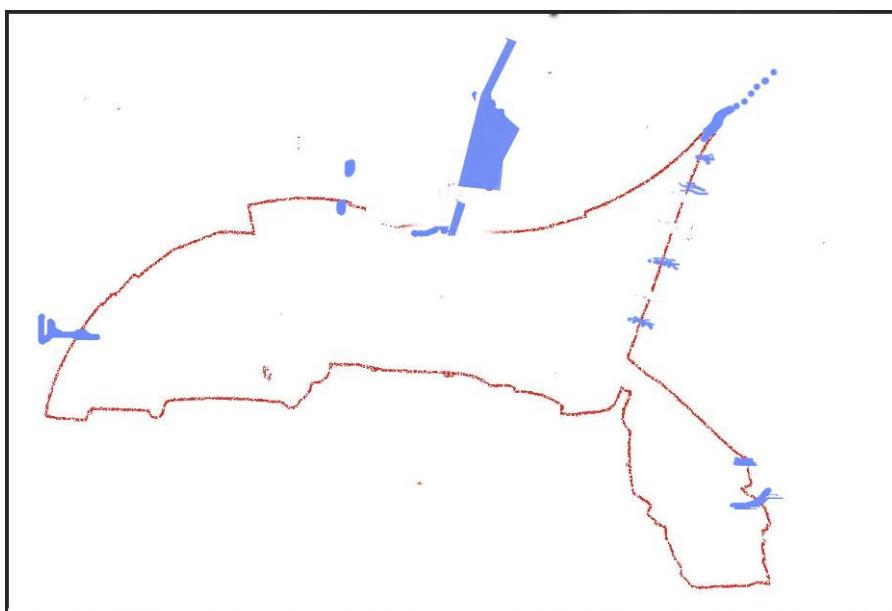


**4. Pedestrian promenade along the water as one most natural main center of the neighborhood**



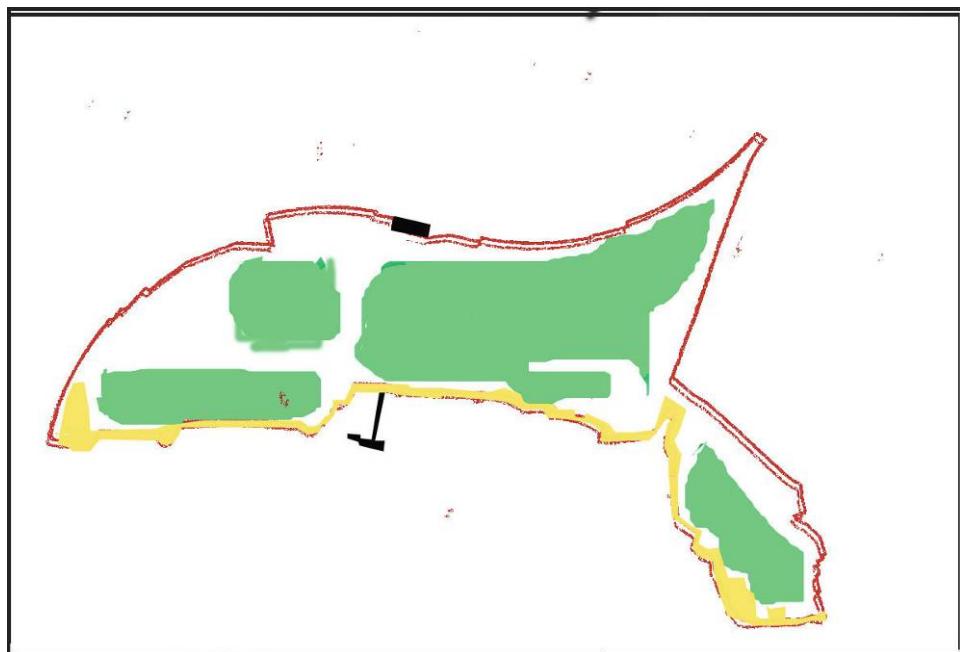
*The promenade can run all along the waters edge, almost uninterrupted. Other pedestrian traffic may run into it.*

**5. Points of connection to next-door neighborhoods which must be strengthened to integrate this neighborhood into the rest of the town**



*These are the places on the boundary where adjacent neighborhoods need to be connected*

**6. Map rough extent of an overall pedestrian precinct**



*An approximate picture of the pedestrian dominated space, with the assumption that most car traffic and parking (except for emergency vehicles, which may use pedestrian paths) will be kept to the areas shown white in this map.*

On the next page we show a composite diagram, which shows the result of applying the six steps described so far.

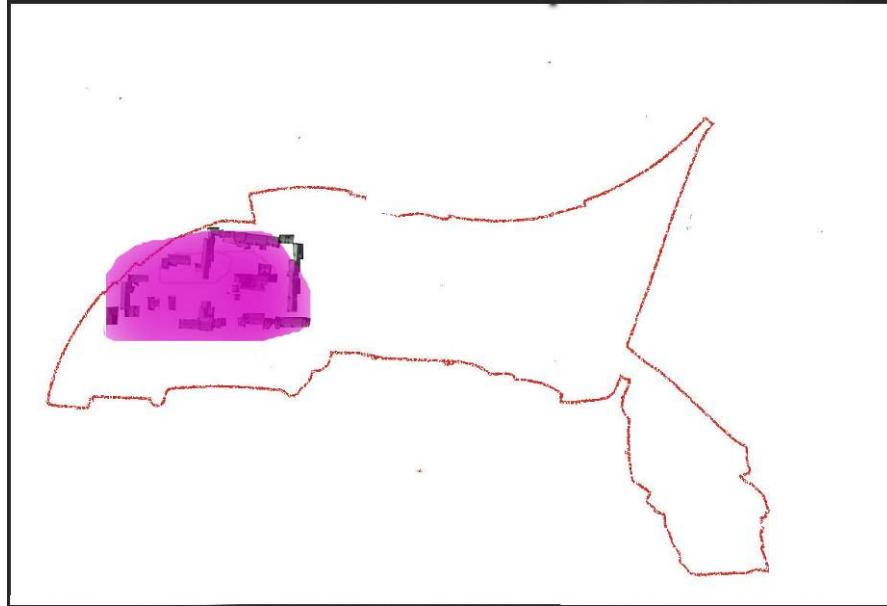
# Composite Map At The End Of Cycle 1, Showing Unfolding Of Diagnosis, Special Places, Links To Nearby Neighborhoods, And The Probable Extent Of A Pedestrian Area.



## **SECOND CYCLE OF UNFOLDING**

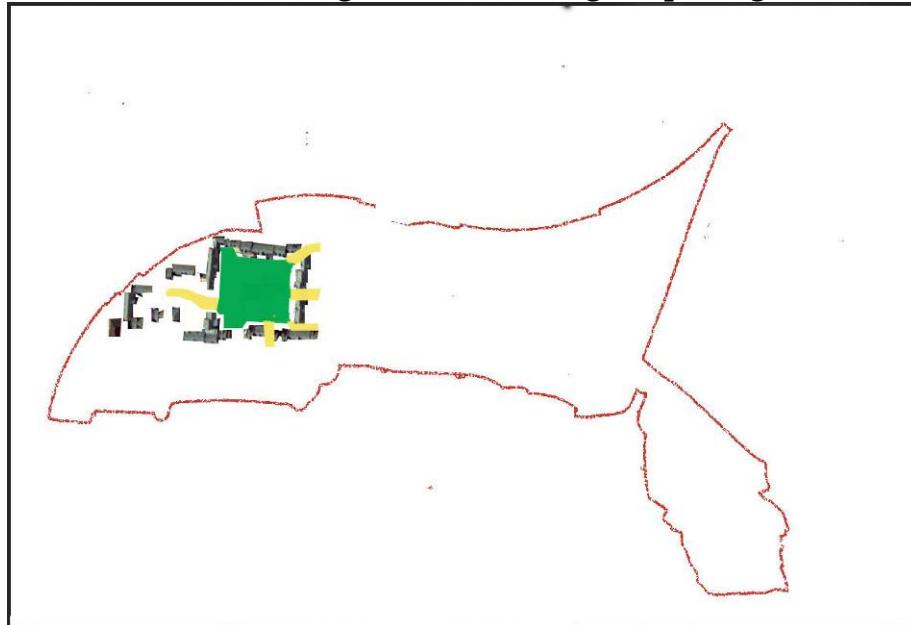
Main gardens, avenues, businesses and groups of houses

### **7. Diagnosis of existing public housing**



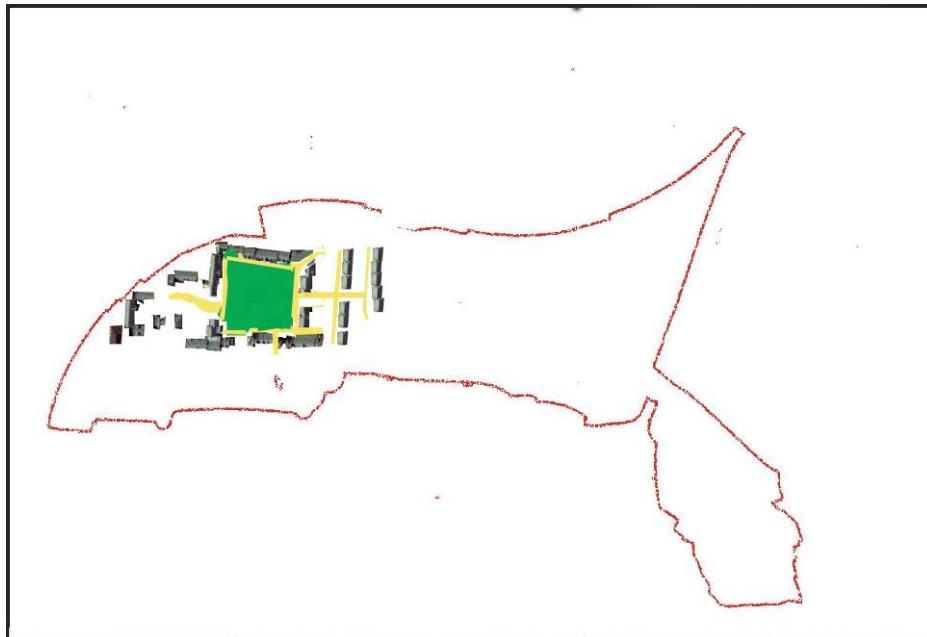
*This complex is in very bad condition currently, with hostility, drugs, and a bad attitude to the overall community.*

### **8. Creation of a common green, with enlarged openings**



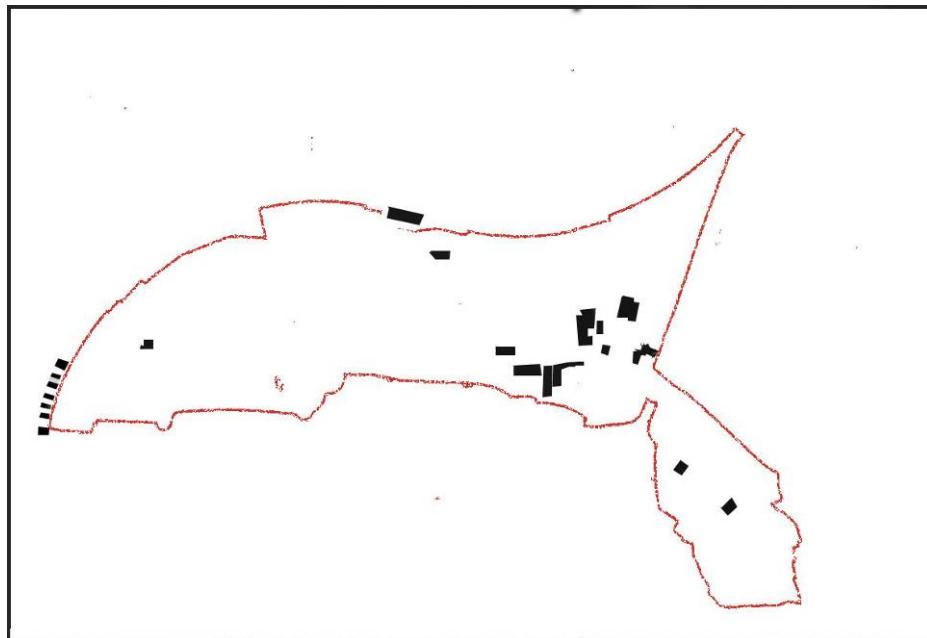
*To bring the place in line with the intended emphasis on friendly green space, we propose removing a small number of units, to create a large garden in the middle, with openings that generate connection to and from the remainder of the community.*

**9. Construction of new houses to connect and integrate with public housing**



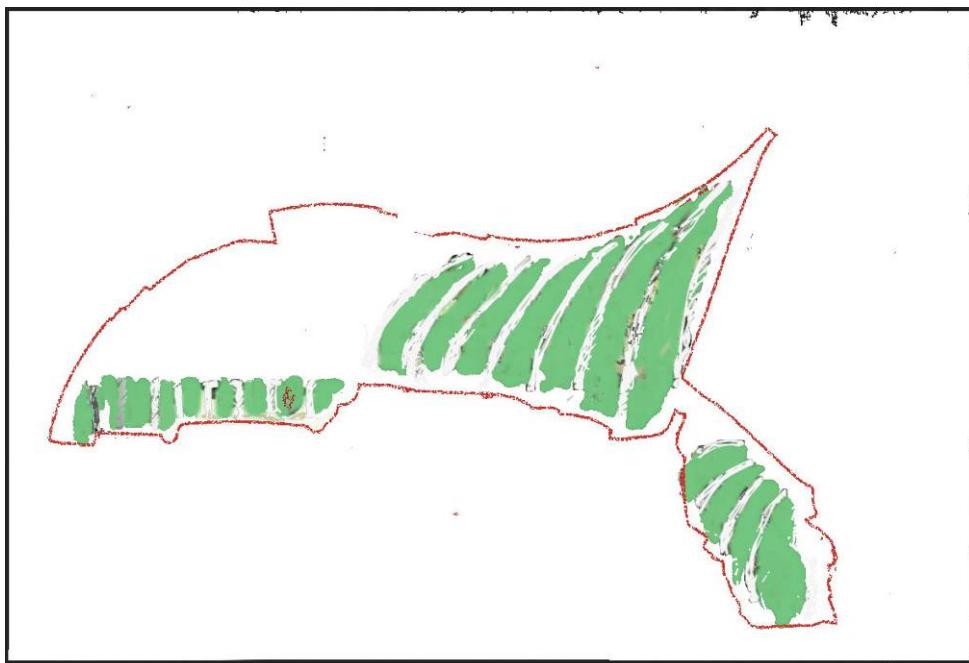
*Here streets and rows of new houses are placed as an extension of the present low income project, thus further ensuring an integration of public housing and market housing.*

**10. Existing businesses are to be preserved, not bulldozed, and then married into new houses, workshops and other buildings.**



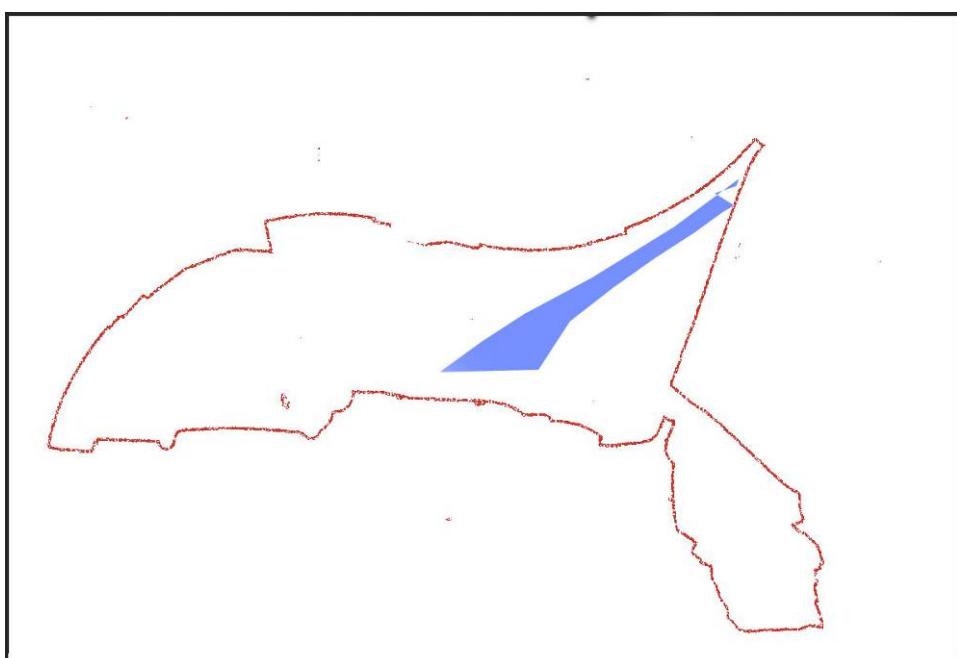
*The buildings marked here in black are existing businesses which we believe might be kept to the advantage of community life, and to the owners of these businesses . The black-marked items at extreme left are new businesses potentially in the arches of the bridge.*

**11. A general approach to the kind of green space serving housing layout which will benefit all houses and their pedestrian common space, with views of river**



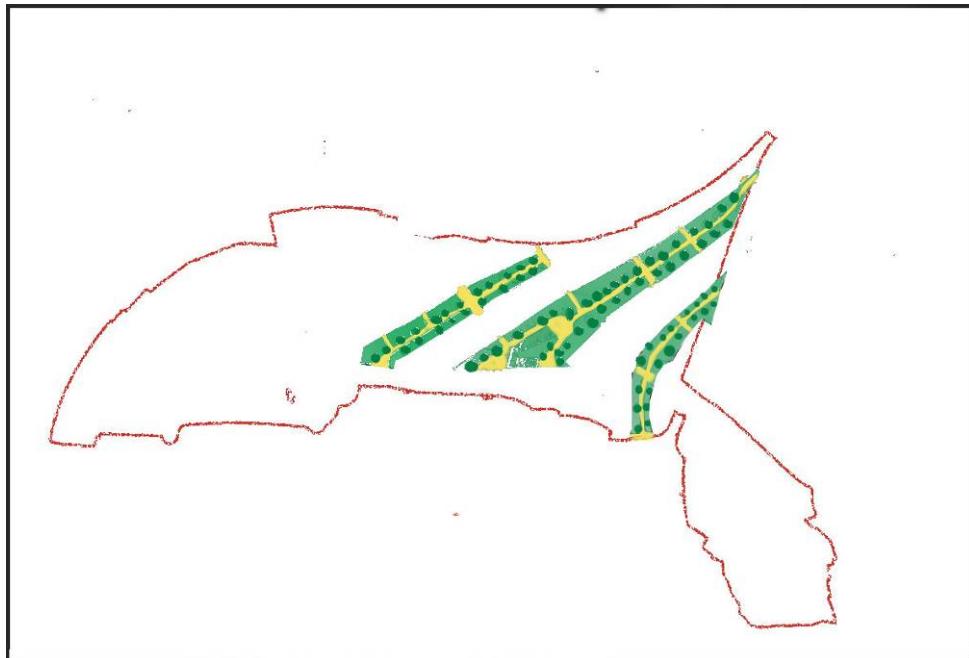
*Trumpet shaped greens providing commons for houses, and looking towards the water, and opening out, flared, at the end, so that everyone who lives on each green can see the water, and the curve gradually opens the view as you walk towards the water.*

**12. View axis of Rochester from the site**



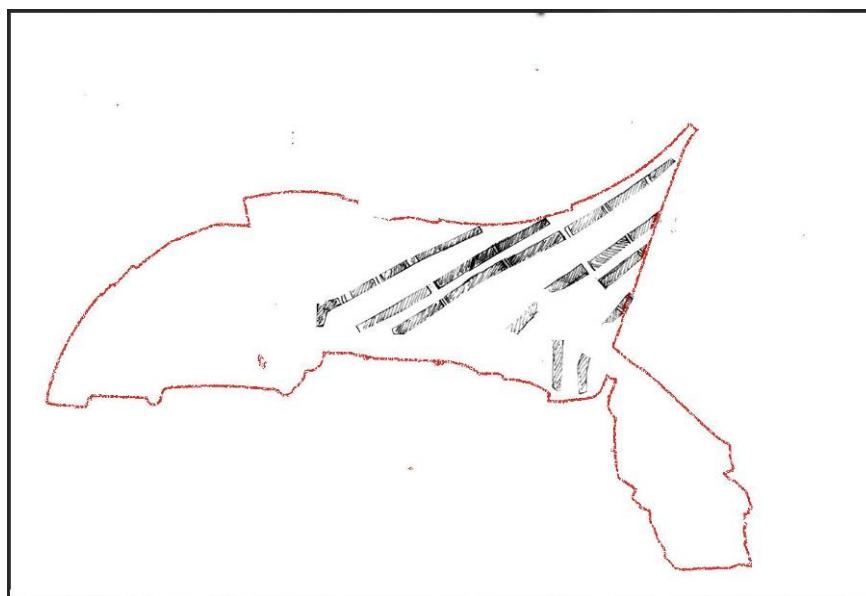
*The view axis, from the center of the site, which gives the most beautiful view of Rochester, focusing on the castle and the cathedral*

**13. Create main tree lined avenues along the line of sight to Rochester**



*The spaces that form the centers of the new housing area, three wide pedestrian avenues lined with trees. As we see in the subsequent steps of the unfolding, the idealized trumpet shape spaces, have given way to something more formal, which fits more easily, and which emerges in a natural way from the geometry of the site, and businesses.*

**14. Then the first building groups containing houses, are placed to form, shape, and enclose the first public greens – the avenues.**



*First groups of houses in the shape of long rows, 2 and 3 stories high, with a cottage format, and each house on a single level, with long frontages and plentiful light for all rooms – these long buildings forming the space of the avenues*

- 15. Calculation of number of dwellings**
- 16. Calculation of total parking needed**

On the next page we show a composite diagram, which shows the result of applying the fourteen steps described so far.

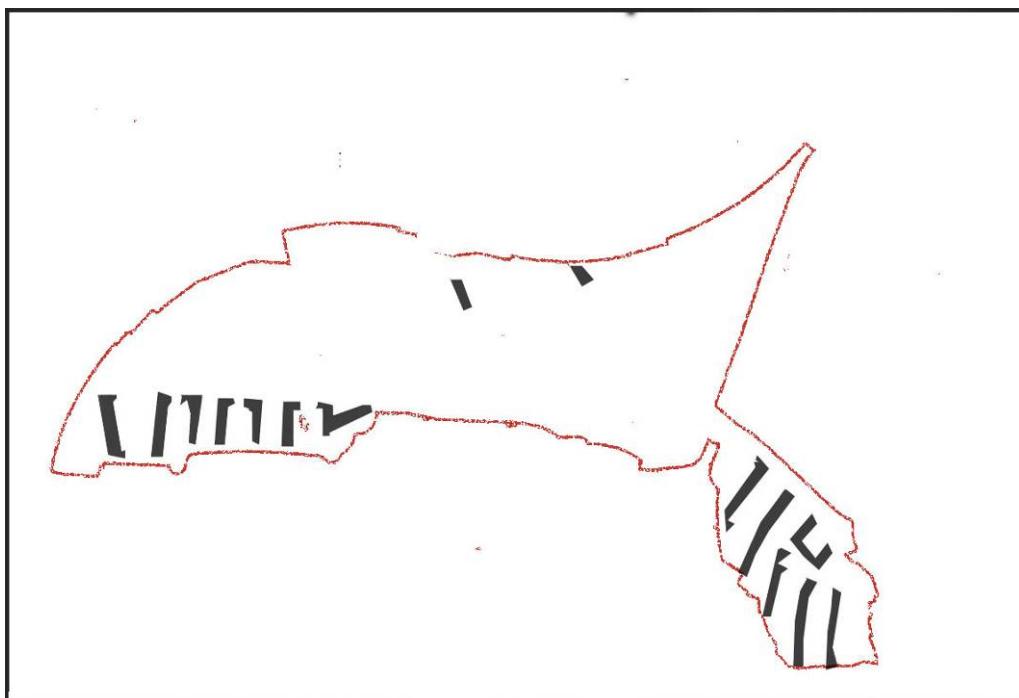
Composite Drawing for Cycle 2,  
Showing Results Of Unfolding For  
Improved Public Housing, New  
Avenues, Green Space, Businesses, And  
Pedestrian Paths



## **THIRD CYCLE OF UNFOLDING**

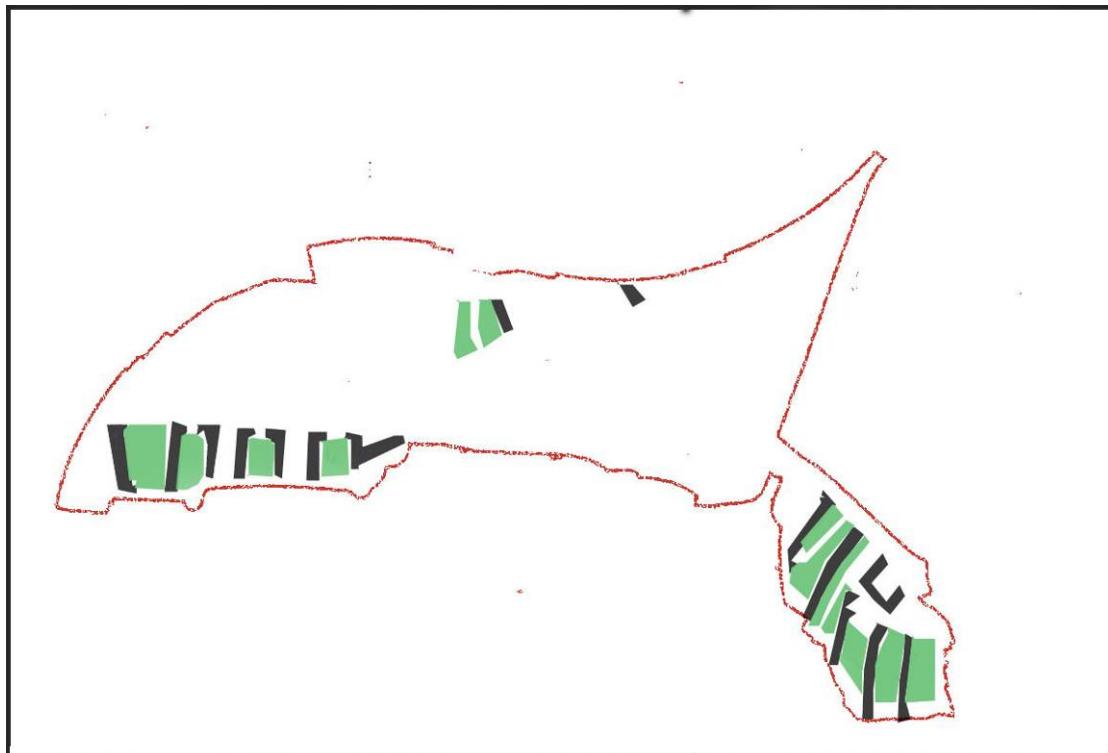
### Secondary gardens and groups of houses

17. Additional areas to fill in unused areas of the site, are now devoted to groups of houses around gardens.
18. First place groups of houses, to form positive space, in the unused areas.



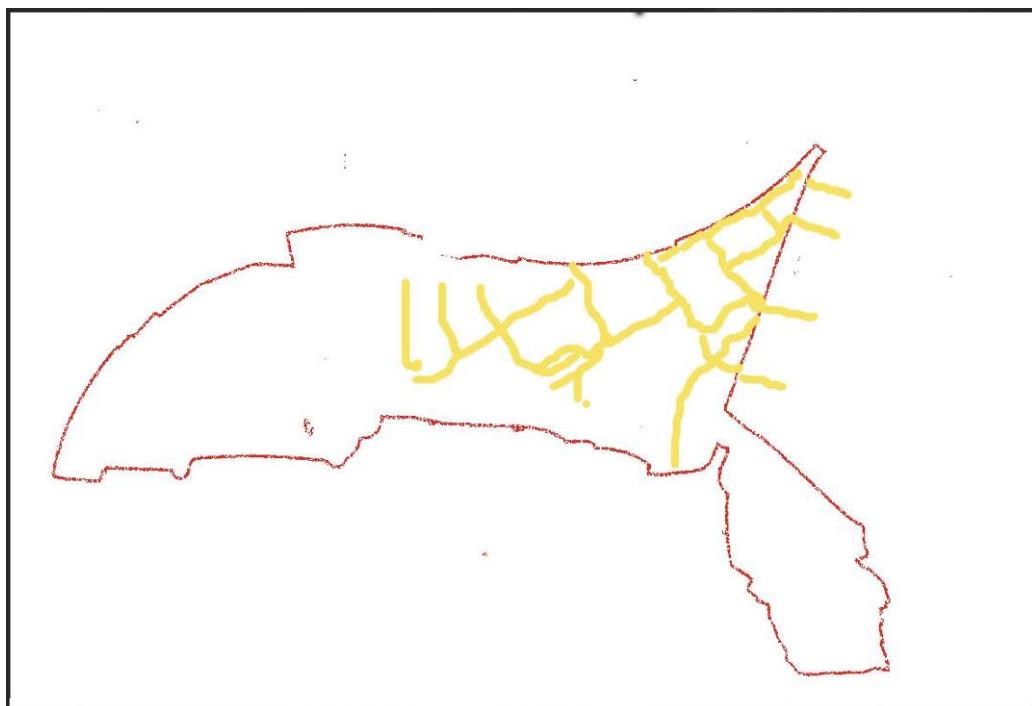
*Houses forming positive space in peripheral areas*

- 19. Next, place secondary greens to fill the positive space created by the new house groups.**



*The common space in each house group is given a green lawn for the inhabitants*

- 20. Next, create a system of crossing paths and loops which connect the avenues and make enormous variety of pleasant walks**



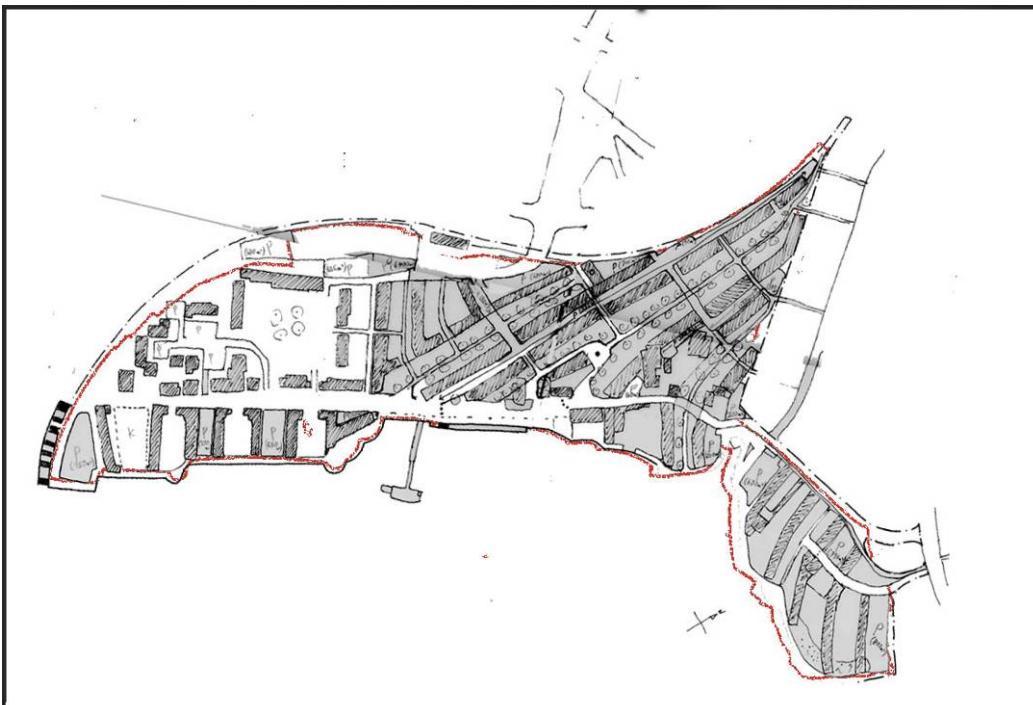
*The criss cross network of paths is then made of the main paths along the greens, and the connection points that come in naturally from next door properties.*

- 21. At the core of the whole precinct, a main drag is enlarged to make a pedestrian hub in the area which was chosen by community members as the natural center of the place**

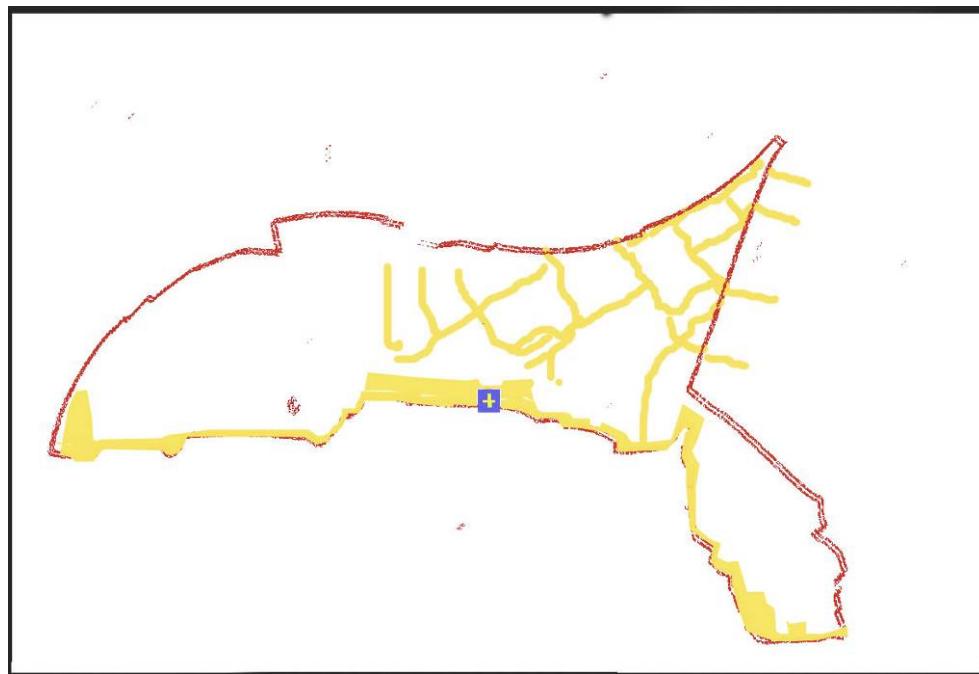


*The broad portion of the promenade is a pedestrian use, of the present roadway, stopped at each end by bollards. This main drag is the point where the principal axis reaches the water, and it is also directly connected to the tavern.*

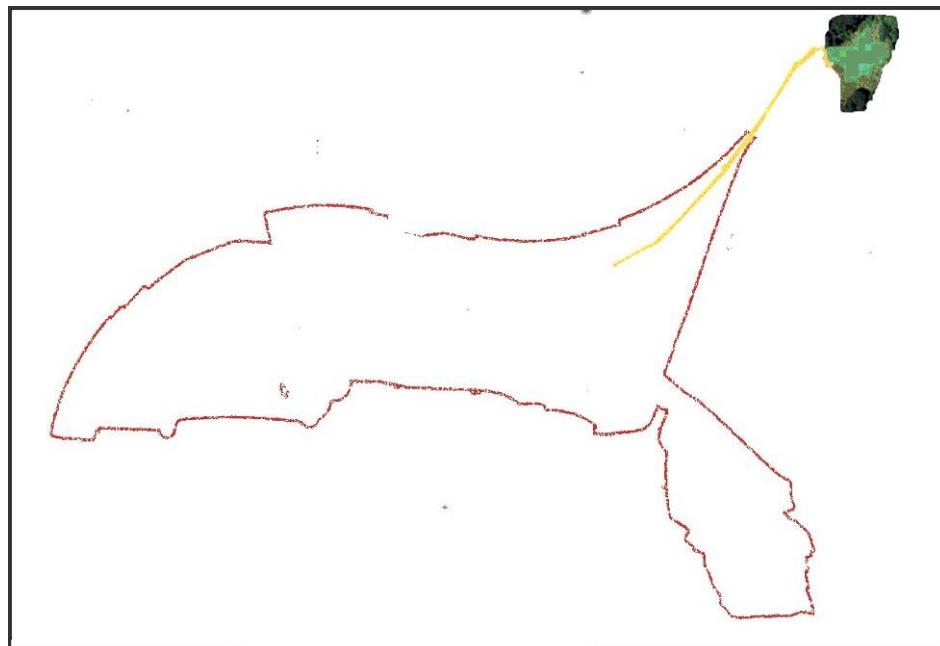
- 22. Now the systems of public greens, house volumes and crossing paths can be put together easily to provide easy access to every house.**



**23. As a center for the neighborhood, place a local town hall for the neighborhood, at the very core, to be a community gathering place for the neighbors and their businesses**



**24. Make a path to the western green park high above the site so that the new neighborhood has its own green park with a beautiful view.**



*This charming park, high above the site, and overlooking the Medway, is easy to access: a path can be built on the steep part near the tunnel.*

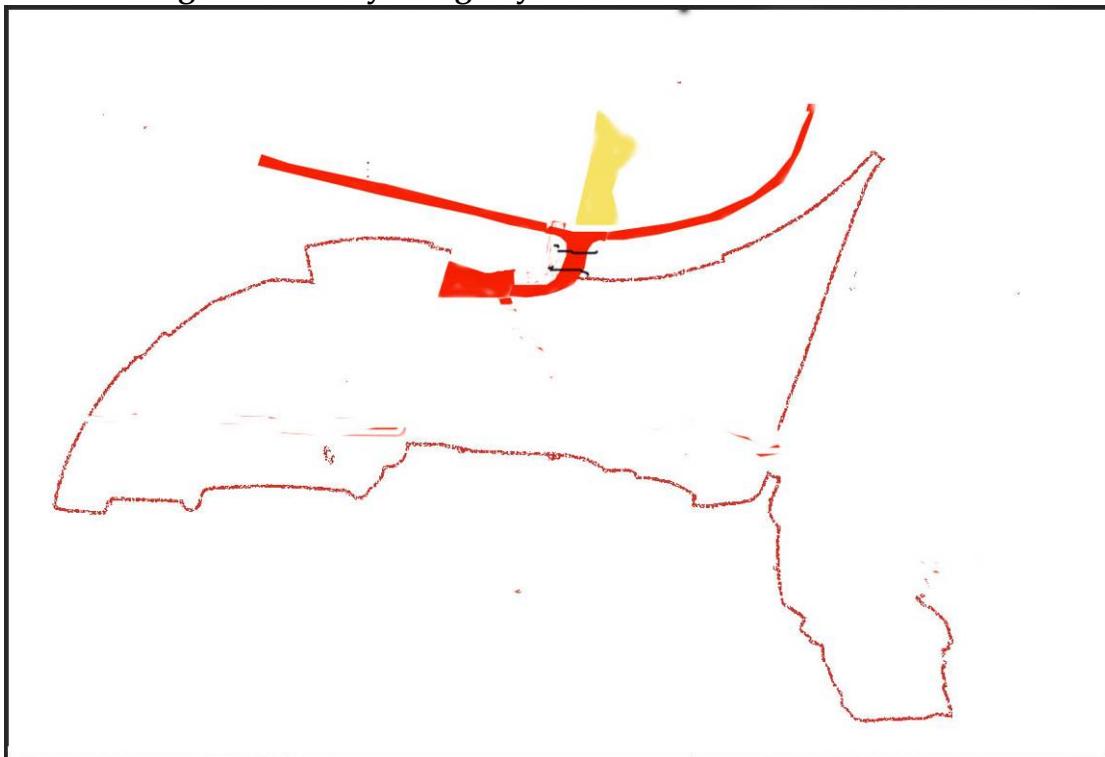
# Composite Drawing After Cycle 3, Showing Unfolding Of All Buildings, Main Drag, And Neighborhood Town Hall



## **FOURTH CYCLE OF UNFOLDING**

Cars, parking, and connectors, unfolded in relation to pedestrian areas and houses which are primary

**25. Enlarge the railway bridge by the station to take traffic**



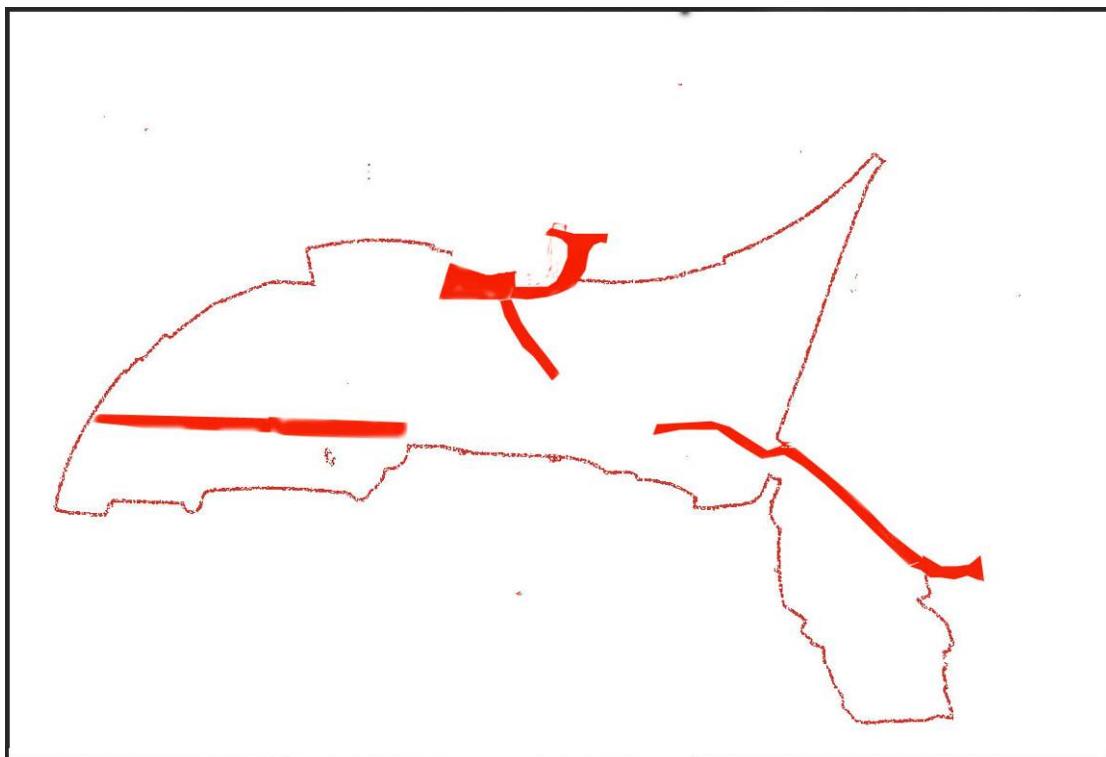
*The existing pedestrian underpass is made into a wide road bridge, connecting this part of Strood with the rest of the town*

**26.**

**27. The first crossing paths connecting with the next neighborhood**

**28. Division of houses to allow further crossing paths and loops**

**29. Car roads, large and small, between the pedestrian ways**



*Car roads to reach the parking lots and access to pedestrian paths for emergency vehicles*

30. First rough parking distribution in small parking lots and narrow parking lanes towards the edge: infill with other, small lots will be required later.



31. Additional house groups filling out the space around existing businesses

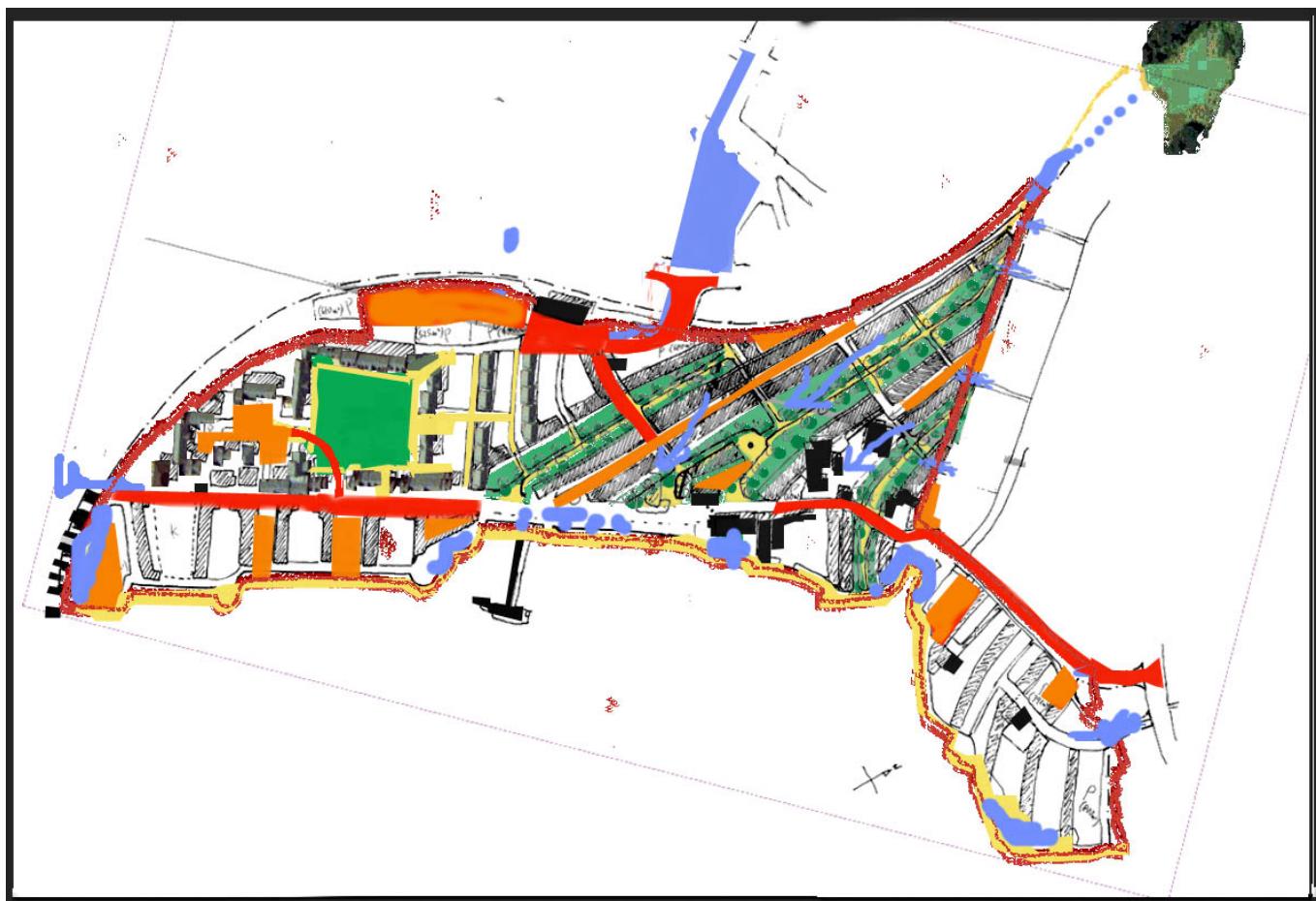
**32. Locating, and building a neighborhood town hall**



*At the end of the widest avenue, and next to the waterfront*

**33. A public walkway above the mud**

# Composite Drawing After Cycle 4, Showing Unfolding Of Improved Public Housing, New Avenues, Green Space, Businesses, And Pedestrian Paths



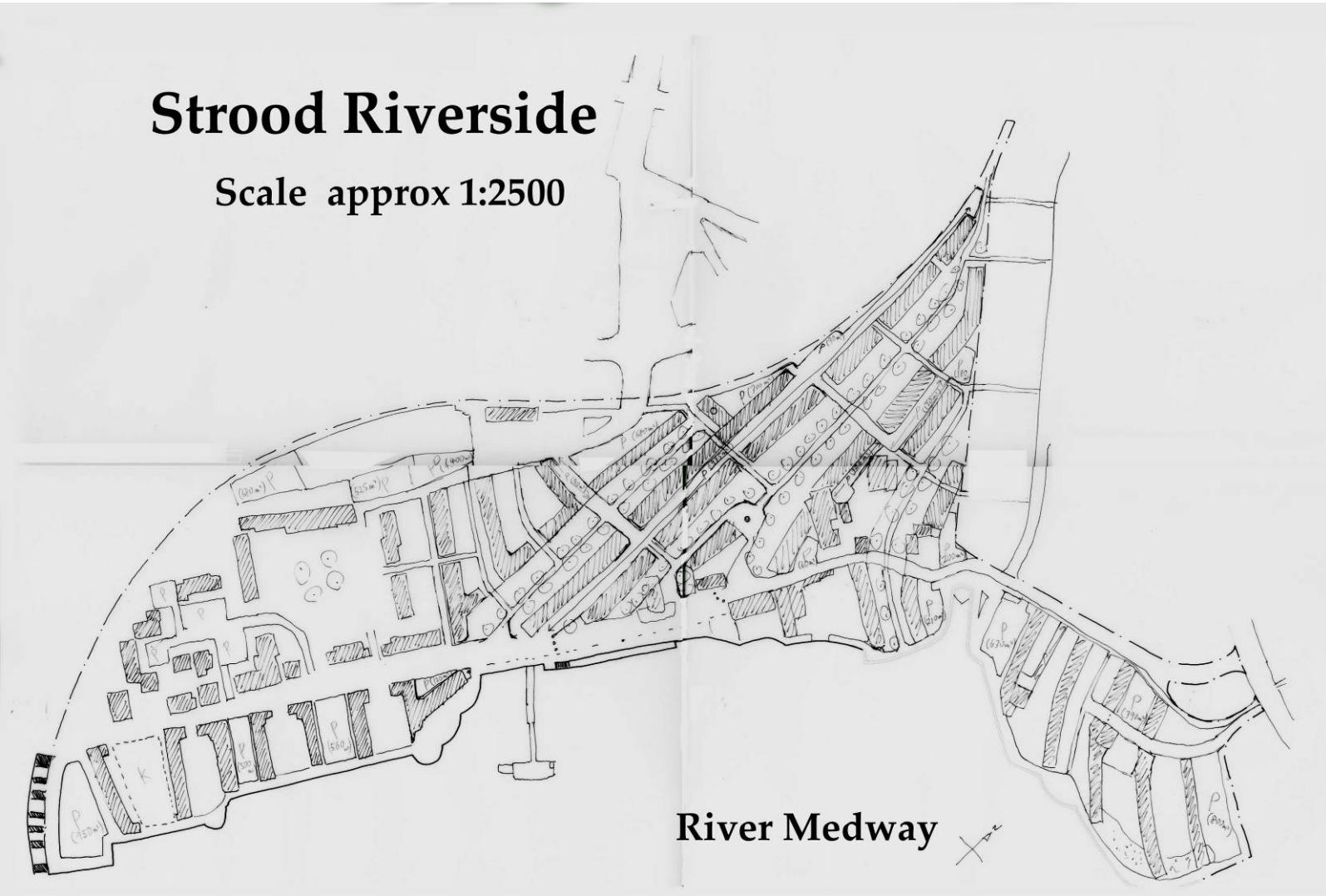
## **FIFTH CYCLE OF UNFOLDING**

### **Detailed treatment of private gardens and houses**

37. Embellishment around the dock
38. Adding greens for remaining house groups
39. Subdivision of house buildings into lengths
40. Shaping local positive space
41. Families choose and stake out terraces and front gardens
42. Locating the entrance and the living room of each house
43. Full layout of interior
44. Placing and sizing windows by the family

# Strood Riverside

Scale approx 1:2500



# Proposal

The plan that has been generated and presented here, and the generative code that produced it, themselves constitute only one major sequence of steps in the actual construction of a new neighbourhood. As has been discussed, this was done as a workshop exercise rather than a full step toward a concrete project. Following is what would likely be required if, as we hope, this site were to become the pioneering new neighbourhood we believe it can be, living up to the enormous potential we believe we have uncovered in the process to date.

In order to pursue the rough first-draft plan put forward, with the generative code approach, we propose to undertake the following relatively low budget series of actions which will determine the feasibility of the plan, and would be, in any case, a prerequisite for adopting this type of plan.

## Preliminary Engineering

1. Check cost of a reliable a low budget flood control system.
2. Check cost of railway arch enlargement.
3. Negotiate with business people to resolve their participation and needs
4. Negotiate with inhabitants of public housing project, to resolve their participation and needs

## Preliminary Generative Code for the project

5. Write a detailed generative code to be used in conjunction with the design of the project, in conjunction with the affected community members, members of Medway council, and the Medway planning department.

# A Technical Note on the Nature of Unfolding

The unfolding which is described in this document, has two or three features which may be unfamiliar to the reader. They need comment.

First, as one reads through the steps which have been taken, in applying the generative code, to the community of Strood Riverside, one sees, at once, that each step is taken piecemeal – it focuses on a particular topic, and examines that one topic to the exclusion of others. This seems to fly in the fact of conventional wisdom. Is it, after all, not a given that in creating a complex whole one must take the whole into account, and cannot assemble it piece by piece?

The answer is, that one can achieve clarity, only by grasping things deeply enough, so that one really understands the implication of each point, taken singly. But of course, in order to achieve that, successfully, one must take the different, single issues, in the right order. The right order is essential, and it is precisely this which allows the unfolding to work.

Secondly, the individual issues are all – each one of them -- applied to the whole. Thus, the points that emerge at each step in the unfolding, are not particles, or parts. They are, rather, the aspect of the whole, which develops and emerges from single minded examination of that issue. Thus, each step takes a further step in unfolding, or elaborating, our understanding of *the whole*.

Finally, it is precisely the single-minded focus on the aspects of the whole, which allows communal action, and communal work, to take place. So long as topics are considered as if they were all floating in one enormous bowl of minestrone, the issues are confusing, communal discussion usually fails to achieve its proper and needed sharpness, and the community process gives very much less benefit than it might do. When its features – aspects of the whole – are instead examined one by one, and in the right order, then the community, all the players together, can reach accord on how that one feature should be handled, in its best aspects, what it does to transform the emerging whole further, and all this then gets fused by the long line of morphological development, into a coherent, complex entity which provides the finished result.

# The Naturalness of the Physical Environment in a Community Created by Unfolding

We are nowadays, sadly, used to the consequences of development as it is practised today. Almost always, with only the very rarest of exceptions, the projects brutalize land, character, and feeling. The shapes of buildings are incongruous with what is there, and what stands around it. The open space between buildings is not pleasant to be in – it is, rather, a left over from accidents of planning law, and botched up dreams of architects who seek to impress their will on the neighborhood. And yet, how are we to achieve any better?

The evolved plan of Strood, as shown in the sequence of steps preceding this comment, explores a radical new path, and one that we believe holds great promise.. It looks and feels like something that grew, instead of being shoved into place. This feeling, visible even in the small sketch, is real. Each step in the preceding sequence, allows morphological features, to grow from what is there, and what was there before. If you continue a small series of small steps, with this philosophical and practical attitude, then the result inevitably does respect the land, does respect the place, and does respect the people. It is this respect that we see and feel , and then sum up in the phrase, “it seems as if it grew there.”

The entire process is morphogenetic. That means, that it allows the coherent unfolding to take place, one step at a time, just as an embryo grows; and it is the growing, changing, evolving morphogenetic field which gradually develops, and leads to a good result. It takes all sides into account, and cements them into a workable physical and architectural whole that will last.<sup>2</sup>

# Endnotes

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<sup>1</sup> See NOO, Book 1, pages xxx-xx, and Book 2, pages xxx-xx..

<sup>2</sup> The theory of this morphogenetic view of planning and architectural design, in the context of community and individual involvement of inhabitants and users, is presented in the four volumes of *The Nature of Order*, and is also summarised in the Schumacher Lecture, Sustainability and Morphogenesis, given in Bristol, October 30, 2004, by Professor Alexander, and reprinted in two issues of *Resurgence*, Nov-Dec 2005, and Jan-Feb 2006.