



NORDIC  
BUILT

# JURY CONCLUSION

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WINNER OF THE NORDIC BUILT CHALLENGE DENMARK



## **Ellebo Housing Renovation**

25-08-2013/ Third draft

Rev:

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André Campos, Joana Mendes – Arquitectos Lda. Portugal  
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## **INTRODUCTION**

This is a presentation of the result of Stage 2 of the Danish part of the open Nordic housing renovation design competition launched by Nordic Built in November 2012. All the design competitions held in the five Nordic countries were based on a pan-Nordic ten-point Nordic Built Charter that sets out the overall objectives for future sustainable design and renovation of buildings in the Nordic countries.

The jury would like to thank the four Danish and international finalists who, based on the Charter, submitted creative and interesting proposals for energy renovation and moderate conversion of the Ellebo housing estate in Ballerup northwest of Copenhagen, as well as for their proposals for addition of penthouses and a general, much needed architectural upgrade and enhancement of the buildings.

It was a substantial task for the jury to study and understand the four finalists' proposals and not least to select the winning entry. The negotiation meetings gave rise to very interesting discussions and contributed significantly to a deeper understanding of the client's brief.

The next stage is further development of the winning entry in collaboration with the client to create a basis for realisation of the renovation measures proposed.

Signed by the jury on 4 September 2013

## **GENERAL REMARKS**

The four entries selected for participation in Stage 2 of the competition were very different, although difference was not a criterion for selection.

Entry 16 prepared by a team headed by Jorge Domingues can be characterised as an upgrade of the existing estate in terms of materials, proportions and the spatial qualities of the individual dwellings. Entry 28 prepared by FORA is probably the most conceptual of all the entries and is primarily based on the addition of glass fronts to one facade of each of the four blocks. Entry 29 by Kahn Architects clearly takes its point of departure in the site and the situation and its inspiration in traditional Danish housing estates. The scheme proposed is both toned down and spectacular. Finally, Entry 61 by AI A/S is a well prepared and well considered, and the only entry that adds new housing units in the central space of the estate.

The two first-mentioned entries are mainly Portuguese, Entry 29 is British and Entry 61 is Danish.



In the first stage of the competition, the four entries selected were at very different levels of detailing. They were further developed in Stage 2 and are now at basically the same level. All four entries are characterised by high architectural and technical quality, they are well composed and well documented, and they provide precise and thorough responses to the challenges set out in the competition brief. As a result, four entries, all of which met all the formal, quantitative and calculable criteria formulated, were to be assessed. For that reason, other non-measurable parameters were decisive in the selection process, including architectural originality and robustness in the context of resident involvement.

All four entries remain loyal to the concepts, themes and strategies presented in Stage 1. All the participating teams have succeeded in addressing the weaknesses identified in their schemes and in providing documentation of energy consumption, costs, floor areas, etc. However, there are differences in the degree of detailing presented. The entry that stands out most in this respect is the entry submitted by Khan, which is particularly well prepared for a future realisation process, and the entry submitted by AI, which features a smart, holistic addition to the pragmatism illustrated in Stage 1.

All the entrants complied with the request strictly to work on the basis of the Nordic Built Charter. The AI team actually set up an external committee to evaluate the scheme's compliance with the Charter principles, and Khan suggests communication of the principles to residents by means of a set of postcards.

When assessing the entries, the jury found that, for practical and social reasons, two of the concepts proposed were less robust than the other two in terms of the possibility of realising them in intact form. One of these entries is the Domingues entry, as the cost of the proposed comprehensive changes to the load-bearing walls of the buildings would exceed the budget and the renovation would require temporary rehousing of residents. The radical glass covering proposed by Fora was also considered to be so socially challenging and so demanding in terms of indoor environment technology that the scheme was unlikely to be able to stay within budget and meet the requirements concerning involvement of residents.

The assessment could therefore be narrowed down to a choice between the schemes proposed by AI and Khan. This resulted in a discussion of principles in the jury, focusing on the non-measurable aspects of the Nordic Built Charter. The two schemes reflect two contrasting sets of principles for achievement of a sustainable renovation solution.

AI sees the existing buildings as an anonymous and robust structural resource: a carcass onto which a new facade can be attached. Variation in the facade will be a function of residents' individual choices of bay windows and balconies. This is a universal approach, which the team uses to densify the building complex by means of prefabricated volume-sized elements that make it impossible to distinguish existing building volumes from new, added volumes. The use of an open composition results in a facade idiom of a characteristic low-rise, high-density nature that breaks down the scale. In a sympathetic and compelling manner, the entry illustrates the possible visual consequences of a liberal design approach to the buildings that is consistent with the wishes and requirements of the residents.



In principle, all aspects can be negotiated, including the facade materials for which a number of possible choices are shown in the entry.

Khan, on the other hand, sees the existing buildings as a potential spatial typology and refers to well-known large-scale housing estates in Denmark, using them as a basis for a level of detailing and a facade composition that, on the inside of the buildings, is completely dominated by a characteristic column motif, which serves as an element of variation that is moved to match functional requirements. This highly identity-creating element ensures a discrete, subtle variation at all scales. The Khan scheme demonstrates how an architectural interpretation of a place can provide a building complex with cultural and social properties that make it unique.

While the methodological approach to sustainability is more or less the same in the two schemes, the design strategies applied are radically different: AI advocates an open, user-influenced non-oeuvre that is flexible and universal, whereas Kahn adopts a high-profile strategy in which the architect steps into character as the maker of a place-specific original oeuvre.

From a sustainability perspective, the two entries are on a par in terms of energy consumption, operation and the production of materials. Both entries suggest a low-budget conversion of the existing housing units, and consequently the jury's focus was on whether an anonymous identity based on design openness was more in line with the Nordic Built Charter than a place-interpreting motif-determined identity, also in terms of robustness over time (Principle 06) and the preservation of local resources and adaptation to local conditions (Principle 07). Three points were key in selecting the Khan scheme as the winning entry.

Firstly, the jury was uncertain as to whether the AI composition approach would work in practice. If a majority of residents exercise their right to freely decide the appearance of their facade, the various facade options might not be evenly distributed as assumed in the facade illustrations. In such a scenario, the facade idiom may not have the intended quality, or it would be necessary to control the composition in terms of design, which would go against the philosophy of free choice and make the composition nothing but stage setting – an image of free choice.

Secondly, the jury agreed that the composition principle applied by Khan, integrating access areas, balconies and conservatories, is an extraordinarily sophisticated and talented response to the brief. The proposed design is the one that best meets the requirement of aesthetic appeal set out in Principle 05 of the Charter, which suggest that it will be possible to enhance the social and functional value of the estate because of the very strong design identity added to it.

Thirdly, the jury was not sure whether it would in fact be possible to realise the densification strategy outlined by AI, which is based on buildings being added in the inner courtyard, since this approach would change views from many existing flats dramatically. This should be seen in the light of the fact that, in Stage 2, Khan's landscape design was developed into an empathetic, highly compelling proposal for the interior space, which is a socially faceted response to Principle 03 of the Charter about qualities of nature.



The jury acknowledges AI's universal, method-creating approach to the assignment, and the AI scheme is exemplary in its instructive presentation of state-of-the-art energy renovation. AI manages to create a platform for a new approach to renovation that is pragmatic and scalable. However, the jury's position was that it had an obligation in connection with its assessment of a specific design to look at aspects of interpretation, history and culture, which almost by definition are inconsistent with the adoption of a universal method. In the context of the Nordic Built Charter, the jury attached greater importance in this specific case to the wording of Principle 07 - *'there are no one-size-fits-all solutions'* – than to the apparently contradicting Principle 09, which requires scalability.

In this connection it is important to bear in mind that there is a strong and widespread design tradition in the Nordic countries that has played an important role in the evolution of the identity of the Nordic welfare societies. Against this backdrop, architecture is now a way of achieving social and economic sustainability: cultural value generates social value, which in turn increases the building's financial value, thus making it worth preserving and securing its material resources. However, it is very important for the jury to stress that high architectural quality cannot be taken as a guarantee of sustainable solutions, which is why it was crucial for the jury to select a winning entry that also scored highly on all measurable parameters.

The Khan scheme, which at first may seem conventional, points into the future in many respects, one reason being that it is rooted in a tradition of strong oeuvre, which is unusual in a renovation context and may herald a new era in architectural history with a more subtle and ambitious approach to the transformation of the existing building stock than has been the case to date. In addition, the use of architectural and cultural value as sustainability criteria has been enhanced through the application of the principles of the Nordic Built Charter, which have thus led to a concrete result in terms of influencing development in the field of sustainable renovation in the direction of greater awareness. This is exactly what was anticipated in Principle 02 of the Charter: *'...pushes the limits of sustainable performance as a result of our innovative mindset and high level of knowledge.'*



**FIRST PRIZE**

**Entry 29/42006 submitted by**

**Adam Khan Architects, London**

Adam Khan Dip Arch RIBA FRSA, Anne Femmer, Architect MSC ETH, Camille Sineau, Architect ADE,  
Juliette Scalbert Dip Arch, Patrick Fryer BArch Dip Arch, Philip Thompson BArch Dip Arch

**Daniel Serafimovski Architects, London**

Daniel Serafimovski, architect MAA, James Hand, architectural assistant

**Kristine Jensens Tegnestue, Landscape Architects, Aarhus,**

Kristine Jensens, Signe Winther Beilman, Marie Wacher Rødbro

**Price & Myers, Structural and Environmental Engineers, London**

John Helyer, Sam Pickles, Vidhi Gupta, Stathis Eleftheriadis, Jessica James

**Klaus Nielsen Rådgivende ingeniørfirma FRI A/S, Copenhagen**

Flemming Hagen, Casper Lundstrom

**Esbensen Consulting Engineers A/S, Energy & HVAC, Denmark**

Olaf Bruun Jørgensen, MSc in Civil Engineering

Fredrik Emil Nors, MSc in Energy, Sustainability & Indoor Climate



### **Quality of the conceptual solutions**

More than any of the other schemes proposed, this scheme takes its point of departure in the site and the situation, thus drawing a number of obvious parallels to Danish twentieth-century housing architecture, particularly housing estates based on a simple overall geometry and large park-like central spaces.

In the light of this, the idea of converting the central outdoor space of the estate into a remarkable communal garden proves to be a compelling basis for the development of a number of sub-concepts. The scheme thus gains considerable overall consistency, and all part-decisions and sub-elements contribute to creating a meaningful whole.

Against this backdrop, the necessary facade renovation is seen as an opportunity to change the experience of being a resident of the Ellebo housing estate. This is achieved by converting the large central outdoor space of the estate into a vibrant, varied communal garden composed of a range of smaller spaces, each of which features individual characteristics and serves individual purposes. On this basis, several part-solutions are developed, all of which have the central space as their point of reference.

Furthermore, the scheme is well described and illustrated in an attractive, easily understandable manner.

### **Architecture**

As a consequence of these initial considerations, a main focus point of the scheme is to orient the entire estate towards the large shared outdoor space, which first and foremost means that there must be access to all units from the courtyard side, which is also where the new lifts are located.

It also means that, compared with the current layout, there is a more distinct difference between the outer and the inner side of the estate. The outer side has an urban character that serves as a protecting screen, while the inner side has a more faceted, function-based and layered expression. The layered effect is created by a system of concrete columns on which a prefabricated concrete slab with delicate metal railings rests. These structures serve as balconies and access routes to the exterior lifts.

Together with a number of penthouses that add new facets to the roofline, concrete columns and slabs help change the proportions of the very large outdoor space, partly because the width and length of the courtyard are reduced and the height increased, partly because the new access and break space system forms a pattern of upright formats in both the small and the large scale. In addition to the penthouse units, new flat types are added at the western end of Block 1, which also contributes to completing the frame that defines the large space.

### **Design of the penthouses**



The penthouses are laid out in small clusters of four well-functioning flats located around a lift and an open courtyard. Blocks 1 and 2 also have two-storey flats with access to the penthouse level along internal stairs from the third floor.

### **Landscaping of the outdoor areas**

The design of the central, abundant garden plays a crucial role in relation to the conceptual points of departure of the scheme. The garden space consists of different types of spaces used for different purposes. Along the inner sides of the four blocks, access conditions are improved and small private gardens create distance to trafficked areas.

As compared with the peripheral areas, the large central field serves mainly as a park for shared use, and it is also part of the rainwater harvesting system.

### **Meeting the Nordic Built Charter**

The entry complies with the Nordic Built Charter in that the scheme proposed is clearly *made for people and promotes quality of life*. Furthermore it is both local and global: it takes specific local aspects into account while at the same time using design approaches that are generally applicable because they draw on both traditional and contemporary techniques.

The entrant proposes that sets of ten different postcards – one for each of the ten principles of the Charter – should be handed out to non-specialists to communicate the philosophy of the Nordic Built Charter. Material from the scheme proposed for the renovation of the Ellebo housing estate should be used as illustrations on these postcards.

### **Environmental improvement**

Life cycle (50 year) carbon emissions are calculated for five different renovation options. The entry clearly states the differences in CO<sub>2eq</sub> emissions for all options. In addition, the entry shows both facade and overall CO<sub>2eq</sub> emissions, which makes it easy to compare different facade options. The entrant also presents some useful criteria for determining the advantages and disadvantages of different facade options.

This entry does not provide any details on PV or other types of onsite renewable energy generation. However, it is stated that some renewable generation is needed. The entrant refers correctly to the interpretation of nearby renewable generation in the EPBD recast.

### **Energy efficiency**

Energy calculations are provided for all alternative solutions. The calculations show that the proposed scheme meets the 2015 requirements and also indicates how the 2020 targets can be reached. The calculations clearly show where the energy is used, and the entry features many different solutions for ensuring lower water consumption. This is also reflected in the energy used to heat domestic water, which appears to be assumed to be at a rather low level in the calculations.



This entry features an interesting comparison of natural and mechanical ventilation and the energy efficiency of the two types. The choice of ventilation is based on calculations.

Heating requirements are calculated in dynamic calculations covering a period of one year. The results are given in hours when particular indoor temperature criteria are exceeded. The yearly calculations are realistic, but the typical summer day figure seems unrealistic. The importance of avoiding direct solar radiation gain to ensure comfortable indoor conditions in the summer months is pointed out.

### **Overall assessment**

This entry testifies to a high professional level, and the entrant has very impressively managed to address many highly different issues in a scheme that is both wide-ranging and handsomely detailed. Consequently there is good reason to trust that the team behind the entry will be able to develop the scheme for eventual realisation in collaboration with a large number of different parties.



**ENTRY 16/01143 submitted by**  
**Jorge Domingues – Arquitecto Unipessoal**  
**André Campos, Joana Mendes – Arquitectos Lda. Portugal**

Team:

Architecture: Jorge Domingues, André Campos, Rui Paiva, André Tavares, Joana Mendes, architects

Engineering: AFA Consult, Portugal, and Rambøll, Denmark

### **Quality of the conceptual solutions**

The proposed scheme is loyal to the characteristics of the existing building typology, which it seeks to develop through further detailing and upgrading of the facades.

The layer of added insulation and the cladding from the 1990s are removed in this entry. The original sandwich element facades are partially retained on the north and east facades so that most window apertures are reused (but made larger so that they go down to the floor level). Some of the apertures are relocated or closed, which changes the overall facade rhythm considerably. The existing facade elements on the south and west facades are removed completely and replaced by new doors and windows going from floor to ceiling.

A new 50 centimetre deep balcony slab element is added along the full length of all facades, suspended in a steel structure that makes it possible to ensure effective insulation that can prevent thermal bridges. In this zone, to which there is access from all social rooms in the flats, the facade shutters are also opened and parked, and the zone blends into the open balconies in front of the living rooms, located where the current sunrooms are.

Sills, frames, facade shutters and cladding panels are wood.

The entrant interprets the combination of housing units in Blocks 2 and 4 in a relatively dramatic way: the bathrooms are extended and refurbished, the hallway and access area are improved, the kitchen is moved to the south-western end of the units, and the northern and eastern sides are thus reserved for bedrooms.

The plans proposed feature a number of fine qualities: the location of the kitchen towards the garden and the dining area behind it are an unconventional layout and generates an interesting intensity in the facade zone with unusual, attractive spatial flows between the kitchen, the balcony, the living room and the dining room.

### **Architecture**

The entry manages to reinterpret the facades, inspired by the industrial origin and rational layout of the estate. The vertical formats of the doors and windows form a fine contrast to the throughgoing horizontal balcony strips, creating a compelling and elegantly proportioned whole. The relief effect on the facade created in the balcony strip zone when the shutters are opened or closed at varying degrees is obviously a very important architectural element that also presents a number of obvious



challenges in terms of costs and the maintenance of the many movable parts. Moreover, optimal use calls for relatively committed and well-instructed residents. The motif works particularly well on the garden facades where it serves as an extension of the social zone that elegantly prolongs indoor spaces and connects them with outdoor spaces.

### **Design of the penthouses**

In Stage 2 of the competition, the entrant reassessed the lift system previously proposed, which was relatively comprehensive. In the new layout, access to the penthouse level is at the entrance to the penthouse unit on the current top level where people walk directly onto the lower landing of a flight of stairs and take internal stairs up to the penthouse flat. (A small toilet has been added at the entrance to ensure compliance with Danish building regulations.) This layout would require a favourable interpretation of the regulations by the authorities, as volumes and floor areas on the lower level of the unit are very limited.

The penthouse units are otherwise only modified to a very limited extent and are – like the rest of the scheme – characterised by high spatial and aesthetic quality with attractive inner courtyards, but the challenge is once again to ensure that they can in fact be realised within the budgets applying to social housing.

### **Landscaping of the outdoor areas**

In Stage 2 of the competition, the entrant completely rethought the landscape concept.

Inspired by the buildings' structural facade pattern, the entrant introduces stripes along the length of the courtyard in the form of a mix of paved and planted areas for sport activities, rest and relaxation, ornamental gardens and vegetable gardens. A loggia-like communal building with undefined shared facilities at both ends and an enormous covered (but open) multipurpose structure in the middle is proposed to the south. Both the stripes and the communal building testify to the graphic skills of the entrant but failed to convince the jury of any good landscape understanding on a par with the qualities of the buildings.

### **Meeting the Nordic Built Charter**

The entry still primarily meets the parameters of the Charter in its transformation of buildings, which provides an obvious connection between the qualitative layout of housing units and facade principles at all scales, from overall proportions to detailed solutions.

### **Environmental improvement**

The entry includes calculations of CO<sub>2eq</sub> emissions originating from materials and caused by the operation of the buildings (energy use). The calculations are presented clearly, and conclusions are well clarified, showing a good understanding of the environmental impact of the scheme proposed.

### **Energy efficiency**

The entry features very thorough and detailed energy and indoor environment calculations. The documentation also included operational energy and embodied material-originated CO<sub>2eq</sub> emission



calculations. Furthermore, the entry introduces the option of an ESCO contract and gives an example of the installation of PV panels on the roof via an ESCO project.

Indoor climate calculations were performed thoroughly in dynamic simulations. Passive solar shading was well integrated and the design was functional. In addition to shading, the simulations showed an option for increased ventilation rates and its effect on summertime cooling. Ventilation was properly shown in drawings (also duct location).

This entry was the only entry showing the heat and moisture performance calculations of the new, better-insulated structures. According to the calculations, there is no evidence of a condensation risk in the proposed structure. In addition to building-physics calculations, the entrant has taken possible changes in future climate conditions (eg heavy rains) into account in the structural design.

For the penthouse, the option of under-floor heating was also illustrated.

#### **Overall assessment**

This entry features a compelling facade transformation concept that reflects and interprets various essential aspects:

- Elegant, minimalist reinterpretation of the buildings' structural, industrial and rhythmic point of departure
- Facade relief used as a distinct 'medium-scale element' in the large building volumes
- Spatial quality of the facade relief designed as a narrow balcony/living zone that extends the indoor spaces of the housing units and links them experientially to the surroundings
- Facade relief functioning as structural facade protection and defining a zone that is also part of the energy concept because of the solar screening elements (shutters and eaves)

There is thus consistency between the aesthetic, spatial, functional and energy-related aspects. The landscaping aspects are not at the same level.



**ENTRY 28/11147 submitted by  
FORA, Portugal**

João Moura Fagulha, Raquel Maria Oliveira, João Prates Ruivo, Beth Hughes, Raul Moura, Tudor Vasiliu

**Quality of the conceptual solutions**

This entry remains the most conceptual and sketch-like of the four entries in the final, featuring a clear understanding of the challenges and potential of the housing estate, which is translated into three strategies:

1. Density (described in further detail under 'penthouses')
2. Outing  
With the intention of revitalising the community philosophy applying to social housing and buildings, the entrant adds generous balconies to the individual units, all of which are wrapped up in a single shared glazed space in a challenging balance between individuality and community, both indoors and outdoors.
3. In a similar strategy of mixing privacy and community, the large unassailable courtyard surface is divided into a finely divided pixelation of private allotment gardens, water channels, paths and larger ball-sport pitches, playgrounds and communal buildings.

The combination of housing units in Blocks 2 and 4 is done in a very pragmatic and financially realistic way by the addition of one or two rooms to neighbouring flats.

**Architecture**

As in the Stage 1 scheme, the architecture of this final entry is presented as visualisations focusing on the idea and on conceptual clarity. In Stage 2, this entrant has worked a great deal with structures, surfaces and materials and has done so in a way that testifies to great commitment and empathy in addressing the challenges presented by acoustics, fire safety and views into the buildings. The result is obvious enhancement of the scheme through details and design solutions that are interesting without jeopardising the architectural clarity.

However, the weakness of the scheme is not surprisingly the glass-covered communal space in which all the challenges relating to technical installations, fire safety measures and indoor environment meet, to which should be added the challenges of residents' habits and lifestyles. Despite its continued fascination with the concept, the jury finds that the otherwise clearly presented final scheme does not substantiate sufficiently well that this crucial feature of the entry can be successfully realised in such a large-scale, complex renovation project. One problem is that the glazed spaces are oriented very differently.



There is no doubt that the requirements for comfort and a good indoor environment in the partially open glazed areas (which have to be partially open for fire safety reasons) will have to be very high to ensure that the residents will embrace these new shared spaces that will also present behavioural challenges.

The entry has provided valuable input to the jury's assessment discussions, as both the text and the concept challenge the process of resident influence, and in that sense the still conceptual description of facade scenarios and options invigorates the vision of not letting architecture become a finalised statement but rather a matter to be negotiated and adapted to the wishes of each individual resident.

The detailing of the exterior facades, for which rendering is proposed, is modest, and the arrival and entrance areas would have benefitted from further treatment. The proposed shutters are interesting and would undoubtedly serve a climatic purpose, but once again the design is only treated at a theoretical level, since it would require great involvement of residents to ensure timely operation of the shutters, just as the operation of the housing estate as a whole would be affected by the need to maintain the many movable parts.

### **Design of the penthouses**

In the penthouse units, the entrant uses the combination of the units' location at the top of the buildings and the special access conditions (access direct from the facade) to present a plan for the penthouses that is radically different from conventional dwellings in social housing. Access to the penthouses is from new stairs and lifts at the ends of the blocks (and from a number of existing staircases that are continued upwards), along shared balconies at the end of the large glass-covered communal area and then directly into the living rooms of the penthouse units.

Once again the unit plans are fascinating because of their conceptual clarity, flexible open spaces and the skylit kitchens and bathrooms in the building core. The elaboration of the design in Stage 2 has enhanced the quality of the units, which the jury sees as one of the most important contributions to rethinking social housing in a renovation context.

### **Landscaping of the outdoor areas**

The entrant did not greatly elaborate the landscape concept proposed in Stage 1 in Stage 2 of the competition. Block 4 remains unresolved in relation to the location of the parking and arrival areas along the sunny western facade, where the social rooms of the flats are located. Moreover, the location of the glazed communal space on the eastern side of Block 4 reflects a dilemma between the wish to optimise the courtyard on one hand and the obvious location of the glazed space on the sunny side in continuation of the living spaces of the housing units on the other.

Irrespective of this, the jury would like to highlight the 'community' landscape concept proposed as one of the most innovative in the competition, and one that has inspired the other entrants in their more detailed design.

### **Meeting the Nordic Built Charter**



The entry complies particularly well with the qualitative, abstract and innovative parameters of the Charter but – after further elaboration in Stage 2 – also to a considerable extent with the specific and measurable parameters.

#### **Environmental improvement**

The entry illustrates CO<sub>2eq</sub> emissions during the operational phase and the embodied CO<sub>2eq</sub>. The calculations were performed thoroughly and showed good understanding of environmental impact.

#### **Energy efficiency**

The energy calculations were very well documented and thoroughly done. The reductions in energy consumption were shown stepwise, and the calculations showed clearly the deviations of different energy demands. The effect of an atrium on energy consumption was well designed and calculated.

Indoor climate calculations were done in dynamic simulations and showed very deep understanding of building shell behaviour and its effect on indoor climate.

This entry included an exceptionally good analysis of energy efficiency and indoor climate.

#### **Overall assessment**

This entry deserves special mention for its conceptually clear, yet challenging responses to the brief. Based on a sharp analysis that borders on being a caricature, the entrant illustrates solutions that are logical and interesting responses to the challenges presented by the housing estate, inspired by the intentions underlying modernist architecture. The dilemma is that the proposed additions to the existing buildings will remain abstract and challenging in relation to the lifestyles of most of the residents and their ideals as regards quality living.

Another weakness of the entry is that it fails to adapt to the different locations and orientations of the buildings. The conceptual clarity comes at a price but, on the whole, the entry provides thought-provoking and innovative inspiration for Danish/Nordic renovation traditions at several levels.



**Entry 61/77998 submitted by**

**AI A/S, Denmark**

### **Quality of the conceptual solutions**

The overall strength of this scheme is that it is adaptable to the changes and adjustments that can be expected in connection with a realisation procedure with many different parties influencing decisions. In addition, this entry is the only entry that proposes genuine restructuring of the current overall layout, in which the large rectangular outdoor space is dominant.

The scheme is composed of several minor elements that are not necessarily connected but can be combined at different levels of ambition and scale. This also makes it possible to adjust costs.

Architecturally, 'downscaling' is a key concept, which in practice means that the existing blocks are made more nuanced by means of new facades, new flats at the ends of the blocks and new penthouses on the roofs. The most dramatic downscaling is the introduction of new housing in the courtyard, which is thus divided into a number of smaller and more diverse outdoor spaces.

Replacement of the facade has the highest priority in the renovation of the existing blocks, while the entrant seeks to keep changes to the primary structures to a minimum.

### **Architecture**

The entire housing estate after renovation and addition of new building elements is illustrated as a relatively homogenous village with facades clad with Corten steel or other types of cladding. Heat-treated, organically impregnated wood is also used to a limited extent.

Both new and existing buildings look like stacked units. Behind this homogenous appearance that links the existing flats in the multi-storey buildings with the new low-rise, high-density additions are two versions of industrial buildings: 'crane-track assembly' buildings typical of the 1960s and 1970s and the contemporary variant composed of light three-dimensional units.

The new added units at the ends of the blocks and in the courtyard are 4 to 4.5 metre wide and 10 to 14 metre long wood/plaster boxes. A number of examples of different well-functioning units laid out within the framework of this geometry are illustrated.

### **Design of the penthouses**

On the top of Blocks 2 and 4, two-level penthouse flats are established through the combination of existing two-room flats on the third floor with two new rooms at roof level. The two levels, to which there is access from the existing staircase, are connected by internal stairs, and a rooftop terrace can be accessed from the top floor. This solution does not require a lift.



### **Landscaping of the outdoor areas**

The addition of new buildings in the large outdoor space of the estate determines the layout and nature of the outdoor areas. An area that could be said to be too big to be a true courtyard and too small to be a park is transformed into three smaller, interconnected spaces between which transitions are smooth. In terms of traffic, a shared space approach is suggested, and two strategies are proposed for the green areas: privatisation of outdoor areas to create a greater sense of belonging and a large shared forest garden. However, it is somewhat unclear how the differences in maintenance requirements applying to a forest and a park should be addressed.

### **Meeting the Nordic Built Charter**

The entry's compliance with the Nordic Built Charter is documented in a number of images on three levels.

The top level sets out the ten numbered principles. The intermediate level contains a number of primarily spatial general illustrations of the scheme organised so that the numbers refer to various sub-elements. At the lowest level, the same numbers refer to a number of diagrammatic illustrations in the categories Global Scale, Urban Scale, Building Scale and Human Scale.

In this way the relatively abstract story of the Nordic Built Principles is presented in a specific and easily understandable way.

### **Environmental improvement**

The LCA calculations were thoroughly done and showed the deviation of CO<sub>2</sub> eq emissions for different parts (construction, heating, etc). The CO<sub>2</sub> eq balance timeline was a very good way to show the impact of renewable production. The entry shows both the facade and the overall CO<sub>2</sub> eq emissions, which made it easier to compare between different facade options.

The entry specifically stated the amount (in m<sup>2</sup>) of PV panels needed for different renovation options and their potential to reduce CO<sub>2</sub> eq emissions.

The entry also applied the DGNB criteria, which gave a holistic picture of the scheme proposed.

### **Energy efficiency**

Energy calculations are well documented. The entry shows two possible heating systems, air heating with supply air and radiator heating, but it fails to give any clear recommendations or to describe the advantages and disadvantages of the two alternatives.

Indoor climate calculations were carried out in a dynamic simulation environment and were presented clearly. The calculations assume some of the windows to be open in meeting the criteria of indoor temperature during summer. Exterior solar shades are not used maximally.



The decentralised ventilation systems proposed seem to perform very well with respect to noise levels, which were extremely low.

### **Overall assessment**

The entry is well prepared and reflects a clear position in relation to almost all aspects of the assignment. As compared with the three other entries in Stage 2, this entry stands out in that it divides the large courtyard space into a number of smaller and consequently more urban spaces. Furthermore, the endeavour to create a lively and 'self-grown' exterior means that a clear distance is taken from the large-scale housing estates that Ellebo represents.

This strategy has several advantages, including a great deal of flexibility, but it is problematic that some of the current residents will be affected by the renovation activities to a greater extent than is the case for the other schemes proposed. Moreover, the entry makes it relevant to discuss whether it is acceptable to 'erase all traces' when existing buildings are converted.

## **COMPETITION FACTS**

### **Competition promoter, competition type and assignment**

Competition promoter: Nordic Built/Nordic Innovation.

The competition was organised as a two-stage competition on sustainable building renovation: an open multidisciplinary design competition followed by a negotiated procedure with the winners of the design competition.

### **Competition period**

3 March 2013 – 1 July 2013

### **Jury**

*For Nordic Innovation*

Hans Fridberg, project manager

Anniken Kirsebom, construction manager

*For Ballerup Ejendomsselskab*

John Carstens, chairman, Ballerup Ejendomsselskab

Inge Støvring Petersen, deputy chairman, Ballerup Ejendomsselskab and chairman of the Board of Departments, Ellebo

*For KAB*

Rolf Andersson, director of construction

Pernille Egelund Johansen, project manager



*For Ballerup Local Council*  
Tom Nielsen, deputy mayor  
Lone Schock, planning manager

*Design professionals appointed by the Danish Architects' Association*  
Søren Nielsen, architect MAA  
Finn Selmer, architect MAA  
Claus Smed Søndergård, architect MAA

*Design professional appointed by Nordic Innovation*  
Miimu Airaksinen, research professor, VTT Technical Research Centre of Finland

*Adviser to the jury*  
Michael Havbro Faber, professor, DTU (Technical University of Denmark)

**Secretary to the jury**  
Pernille Egelund Johansen, KAB

### **Assessment criteria**

The assessment criteria applied in Stage 1 were, in principle, also applied in Stage 2. However, there was one significant difference: in the second stage, the many different aspects of the assignment, including the functional, technical and financial aspects, were scrutinised to a much higher degree. In that connection the jury also focused much more on assessing the schemes' compliance with the principles of the Nordic Built Charter.

### **Assessment period**

1 July 2013 – 4 September 2013

### **Prizes**

Each design team selected to participate in Stage 2 will receive a sum of NOK 300,000. Half of this amount was paid after Stage 1 of the competition, and the other half will be paid after Stage 2.

In addition, a Nordic Built Prize of NOK 1,000,000 will be awarded to the final Nordic Built Challenge winner (one of the five winning entrants).

The prize money for Stage 2 is tax-free and will be paid through Nordic Innovation.



**Competition result**

First prize  
29/42006

**Number of entries submitted**

4

**Number of entries accepted for assessment**

4

**Danish/international entries**

1/3

**Signatures of the jury members**

*For Nordic Innovation*

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Hans Fridberg, project manager

Anniken Kirsebom, construction manager

*For Ballerup Ejendomsselskab*

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John Carstens, chairman, Ballerup Ejendomsselskab

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Inge Støvring Petersen, deputy chairman, Ballerup Ejendomsselskab and chairman of the Board of Departments, Ellebo

*For KAB*



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Rolf Andersson, director of construction

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