NORDIC BUILT

JURY PRONOUNCEMENT

WINNER OF NORDIC BUILT CHALLENGE

NORWAY

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September 10, 2013

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1 THE COMPETITION

1.1 The Nordic Built Challenge

Nordic Built is a Nordic initiative to accelerate Nordic competitive concepts for a sustainable built environment. The program is part of the Nordic co-operation program for Innovation and Business policy 2011-2013, and also one of the Globalization initiatives initiated by the Nordic Prime Ministers. Nordic Built is a sustainable “flag ship” initiative funded by and under the supervision of Nordic Innovation, a key participant in the implementation of Nordic partnership programs in the areas of trade, industry and innovation with the objective of promoting cross-border trade and innovation within the Nordic countries.

The Nordic Built Challenge is an explicitly multidisciplinary competition where innovators from within and beyond the building sector have been invited to compete with the aim to concretise Nordic Built Charter objectives at a practical level. It is an innovation competition, not targeted at any specific profession. This has been consistently important for the initiative holders.

The task is renovation of five specific buildings in a sustainable, viable and scalable manner. These are some of the most common building types in the Nordic region. In three countries the objects are office buildings, two low-rise and one high-rise. In two countries the objects are housing estates from the vast housing programs of the 1960’ies. Each and all may become precedence objects in the coming wave of environmentally and economically sustainable renewals.

The Norwegian building is Posthuset, a high-rise office tower that is part of the Oslo Central Station complex. The owner is Entra Eiendom AS (the “Client”).

The Nordic competitions are all two-stage events, Stage 1 open and Stage 2 restricted to four winning entries. Stage 1 was launched in Stockholm on 8 November 2012. 4 winners of the Norwegian competition were announced in Oslo on April 4.

For Stage 2, the four groups in the Norwegian event received a written evaluation from the Jury, with both general and specific recommendations and guidelines. Stage 2 started with meetings between the each one of the 4 teams and the Client. Jury recommendations were conveyed and discussed. During Stage 2 the teams have had mid-way meetings with the Client and their expert advisors.

In Stage 3 of the Nordic Built Challenge, 5 winners will compete for being the one that best represents the core ideals and ambitions for the Nordic building sector, as set down in the Nordic Built Charter. The final winning project will be presented in October 2013.

1.2 The Jury

The Jury and its advisory group of experts have been composed so as to reflect the strong interdisciplinary direction, which is part of the basic criteria for the competition. In line with the Nordic focus of the Nordic Built Challenge initiative, the Jury has members from three Nordic countries.

Jury Leader
Bjørn Holm – Director of Projects and Development, Entra Properties Ltd

Members
Kari Kristensen – Marketing Director, Entra Properties Ltd
Carl Henrik Borchsenius, Project Manager, Entra Properties Ltd (Stage 2, replacing Camilla Haugsten – former Environmental Director, Stage 1)
Ørjan Høyer-Farstad, Arch. MNAL, partner/director, LPO Architects AS, Oslo
Signe Kongebro, Arch. MAA, Associate Partner, Henning Larsen Architects (DK)
Fredrik Rosell –Arch. SAR/MSA, Wester + Elsner Architecs AB (Sweden)
Fritjof Salvesen – M. Sc. Engineering, Asplan Viak AS/KanEnergi Norway, nominated by the Association of Consulting Engineers Norway (RIF)
Stein Stoknes – M.Sc.Arch. FutureBuilt (Norway)
Trine Pertou Mach, project manager Nordic Built, Nordic Innovation

Secretary to the Jury
Øystein Grønning migrant AS architecture+urbanism, Norway

Competition Secretariat
NAL (National Association of Norwegian Architects), Per Rygh MNAL

Expert Advisers
The Jury and the Client have been assisted by a group of expert advisers. They have provided crucial in-depth analyses of the proposals during Stage 1 and Stage 2. To some extent, they have taken part in discussions with the participant teams during Stage 2.

Project Development: Dag Christer Øverland, Project Leader Entra for Nordic Built Challenge Norway, Entra Eiendom AS
Environmental issues: Asplan Viak AS Energi, a group headed by Per F. Jørgensen M.Sc. Engineering.
Structural Engineering: Aas Jacobsen AS, headed by Tinus Aune, M.Sc. Engineering
Building and site management issues: a group headed by Thor Thomassen M.Sc. Engineering, Optimo Prosjekt AS
Economy/Costs: a group headed by Olle Rudén M.Sc. Engineering, AS Bygganalyse.

1.3 Jury Pronouncements

1.3.1 Stage 1

26 entries were correctly submitted in Stage 1. After 3 meetings the Jury arrived at a conclusion. Four entries were unanimously named winners of Stage 1.

The four winners were *(in alphabetical order):*

A Well Tailored Suit
Copyright Authors:
BINOM Architects, London, with Pir II Architecs, Oslo
with collaborators
ARUP UK, London, and Petek AS, Garnes Data and Hjellnes Consult, Oslo.

Harvest
Copyright Authors:
Saaha Architecs, formerly (Stage 1) ahA+ AS and Solbjør Arkitekter AS, Oslo and Sarajevo,
with collaborators
Degree of Freedom AS (Engineers) and Gether AS (Energy Analysis and Industrial Development), Rambøll N AS (RIB RIBR analysis), nnn nn

postZERObygget
Author Group and Copyright Holders:
Architects: Space Group Arkitekter, Oslo
Sustainability, Façade Design, Building Physics, Structural Design: BollingerGrohmann + Florian Kosche AS, Oslo
Heating, Ventilation and Air Conditioning System: AJL AS Andresen, Jacobsen & Løyning Rådgivende Ingeniører VVS

Urban Mountain
Author Group and Copyright Holders:
schmidt hammer lassen architects, LOOP architects, Århus DK, COWI DK, COWI NOR, TRANSSOLAR Energietechnik GmbH, München, Vugge til Vugge Danmark.

APPENDIX I has details from the Jury's Stage 1 remarks and recommendations.

1.3.2 Stage 2

All entries were correctly submitted. The expert advisory groups immediately commenced their analyses of the four proposals. In August, a set of meetings and Q&A exchanges between the participant teams and the Client & advisory group took place. After 2 meetings the Jury arrived at a unanimous conclusion.

Urban Mountain is Winner of Nordic Built Challenge Norway,
by the following group of Authors/Copyright Holders:
schmidt hammer lassen architects and LOOP architects, Århus DK, COWI DK, COWI NOR, TRANSSOLAR Energietechnik GmbH, München, Vugge til Vugge Danmark.
APPENDIX II shows the jury protocol.

1.4 Criteria and Goals

The proposals in both stages were evaluated on the basis of criteria set down in the Norwegian competition brief. Criteria were arranged in 3 groups according to significance:

Group 1: Innovation: Technological and Industrial Innovation

Group 2: Market and Economy: Usability and Feasibility

Group 3: Architecture, Urbanism and Industrial Design

Additional basic criteria are the 10 principles of the Nordic Built Charter. Also, the demand for multidisciplinary teams must be seen as key criterion.

The overall goal of the Norwegian competition is to find the proposal that best meets the Nordic Built Challenge, FutureBuilt and Cradle-to-Cradle criteria[1], and Entra's goal of being the frontrunner of environmentally friendly property development and construction in Norway.

[1] FutureBuilt promotes sustainability in Norwegian building practices and will support a project if it has precedence potential and adheres to the principles set down. Behind FutureBult stand a number of municipalities in the Oslo Region. Cradle-to-Cradle (also called C2C) is a methodological principle that advocates recycling and reuse of materials and products.

2 JURY REMARKS

2.1 Recommendations

Jury recommendation to Entra Eiendom AS is that they move to realize the project based on Urban Mountain. Furthermore the recommendation is that Entra seeks the full winning team's assistance, multidisciplinary as a necessity and requirement, in master planning and for the further project development and design.

2.2 General Remarks

Stage 1 had 26 entries from a wide Nordic and international field of groups. Stage 1 brought a variety of ideas that until now have not been commonly used on this scale.

The teams chosen for Stage 2 covered ideas shown in several other entries but were seen to best represent Nordic Built Challenge. And even though it was not intentionally meant to be so, the four were very different in their interpretations of the transformative potential of Posthuset. This has added an element of expressive diversity to the competition event.

Added Densities
The market value of the existing building is considerable. It underwent a major retrofitting in 2003 and several new floors were added. To undertake a state of the art environmentally friendly renewal so soon after the last one is costly beyond the limits of feasibility. The program therefore asks for added floor areas. Additions to the north are shown, providing around 20 000 m2 added floor space.

It is the conclusion of the Jury that a major upgrading of centrally located office space to the environmental standards required now can only be made possible by adding density to urban cores and nodes. Densification, fortunately, is very much part of common sustainability strategies, since it leans on the existence of public transportation systems and will support and enhance these. All four entries are fully in line with such principles.

Wood
The competition has seen proposals for the use of wood in constructions, floors and façades to an extent that truly represents a new trend. Harvest has a radical proposal for the world's tallest wooden building with its wooden bearing system. The Jury finds Harvest truly impressing, all the more so because the static system is well documented and argued.

Other entries show wood used in floor-slabs in order to reduce loads and ecological footprints, and in surfaces and façades and window frames. Such ideas should be considered for implementation in the final project.

Biodiversity
Several interesting ideas on how the retrofitting can incorporate biodiversity in a relatively low-scale manner have been shown. postZERO^2 refers to the quality of higher

yields in the urban biology and the ease with which fauna prevails and grows under favourable conditions.

The Jury finds the proposals credible and recommend that measures of this character be included and made a case for further investigation. Urban Mountain has made biodiversity an iconic element in the proposal itself.

Energy and Environment (E&E)
All four teams have provided very good proposals regarding E&E. No proposed measurements are of a kind that would cause problems in later phases. However, all proposals would need further work in the coming process. Worth noting is the proposal for vacuum insulation in A Well Tailored Suit. The product has some big advantages in lighter and thinner walls and increased area efficiency.

Costs
Material calculations with cost estimates have been conducted by experts, for each of the four proposals and in more detail than required or expected. These calculations vary considerably from the submitted competition material. The Jury and advisors have employed the calculations of the experts.

Costs are high and need to be lowered to a manageable level of risk. This is crucial for the future of the project. It is the opinion of the Jury and experts that all four can be modified to a reassuring cost level, albeit some with less difficulty. Urban Mountain and postZERO^2 are found to be more favourable cost-wise.

Urban Setting
postZERO^2 has done a very good study of the potential for integration between Posthuset and the station, T-bane (underground) and street level, and interconnectivity between the existing and new commercial shopping areas.

The number of bicycle parking spaces varies considerably, from A Well Tailored Suit's impressive 1000 units to 200, 450 and 565 for the others. The Jury will maintain that the ideas best suited can be adapted to all other proposals.

2.3 URBAN MOUNTAIN

The main principle is building addition to the north. A kind of “solar chimney” glass element shoots up between the old and new towers. It is a convector for natural ventilation and a greenhouse. The elements can be seen from several angles as it seemingly penetrates the whole structure. A new glass façade has integrated solar shading and features for natural ventilation. The new towers, shafts and façade elements transfigure Posthuset to a considerable extent, all the more so because the green elements are very much part of the interior.

Added floor areas as a consequence of the new additions amount to approximately 21.100 m2 (Norwegian BTA), close to top range in the competition.

2.3.1 Sustainability and Environmental Quality

Façade, solar screening and daylight
South, east and west façades have double skins, i.e. triple glazing plus single layer glass. To the north, a single shell façade is proposed. If weight problems forbid this, an alternative solution is shown, based on maximum reuse of existing materials. Window cavities have automated blinds, controlled by both outside and inside parameters.

This is the only team that advocates double façades. They are advantageous for energy demand and natural ventilation, and provide protection for solar shading. Daylight simulation is provided. Urban Mountain has the most thorough daylight strategy of all in Stage 2. The amount of glass in the façades has raised questions of coherency in the heat loss calculations, and may seem contrary to present trends. However, the percentage of window areas to full floor areas (Norwegian “BRA”) seems acceptable and should substantiate energy calculations.

Energy Demand and Supply, Ventilation
Both boreholes and ice storage are proposed. One may want to show caution for too many different components, but can focus what is more practicable. TABS are proposed for ceilings. This seems a good system but has at least two serious shortcomings in the existing building: the weight is too high so one has to lose weight elsewhere, and the fitting of tabs onto existing concrete ceilings will be a constant and extremely noisy activity (close to if not beyond what is acceptable) during the entire retrofitting process.

Hybrid ventilation is provided by the use of natural ventilation in the façade modules, and by using cavities to preheat outdoors air. The green lungs are part of this system. Airshafts provide natural outlets. The solar chimney acts like a wind tower. The claim is that natural ventilation can be the sole provider 110 days per year.

Materials
The team has done a thorough job documenting the environmental data used in the calculator. The largest posts adding to emission levels are steel constructions and windows. There is a reduction potential connected to a shift in environmental data from ISY calcus to alternative sources for interior materials.

BREEAM-NOR

The proposal has potential for Outstanding, scoring 112 out of 128 credits (96% including weighing). However, there are much less details about their solutions in the pre-analysis than the other entries.

Ecology, Biodiversity Strategy
Green atria, green house, green roof, green walls and external gardens are present throughout the project. An interesting study of various parts of the Oslo natural habitat that can be maintained in and on the building is provided. The team claims it will be "the building with the highest biodiversity in Norway".

C2C Strategy
Reuse on-site amounts to 100% of aluminium façade, 100% of steel frames, 50% of plasterboards, and 50% of window glass for internal partitions. Reuse off-site applies to insulation, 50% of windowpanes for foam glass (making it 100%), and 100% of floor for new flooring.

In addition there are proposals for low emission new materials with C2C certificates, a "transportation analysis" for materials used, and "take back" provision through leasing of furniture and interior solutions.

Conclusion
This proposal has the most complete strategy for natural ventilation, and the lowest calculated energy demand of all. Green lungs, air cleaning with plants, solar chimney, ice storage and the proposed bio-digester form an innovative element of considerable potential impact. The C2C strategy is very good. Urban Mountain has the best biodiversity strategy of the competition, and the most thorough daylight strategy.

This is clearly among the more innovative proposals of the competition. On environmental innovation and strategies, Urban Mountain stands out among a very proficient group of competitors.

2.3.2 Criteria Group 2 Market and Feasibility

Added areas
New floor areas amount to 21.100 m2 (Norwegian BTA). This is one of the highest scores and reflects an efficient expansion within given area limitations.

Structural Principles
No new building element rises above the existing one except for the glass wind tower. The solution necessitates strengthening measures. The proposal does not conclude on lateral bracing, but undertakes a discussion that leaves options open for alternative solutions. There are unresolved issues with new façade loads in the existing building. The same goes for added weight / new foundations for the ice storage element.

The principles used here are all well known and will work, given adaptive measures that are normal at this stage of preparation.

Construction Process

TABS fitted in the existing building will add unacceptable levels of near constant noise, due to the sheer number of bolts needed. Other than this, the process of new construction and retrofitting can become efficient and with minimal inconvenience.

Market Standing
Urban Mountain has a biodiversity strategy that is well imbedded in the architectural design, externally and inside the building. This element makes the building stand out as interesting and positive, both in terms of architectural design and with the omnipresence of the green elements inside. If cost margins, added area efficiency and market potential can balance each other, this project could become a success.

2.3.3 Criteria Group 3 Architecture, Urbanism and Design

Landmark // Icon Quality
The basic, innovative tale of this project is about the coexistence between atria, daylight and plant life. This tale of a green building has been strengthened in Stage 2 and now emerges with thoroughness and clarity. The change towards conceptual consistency in architecture and design is significant. The building wants to be a manifest alternative, it insists on setting a new standard. This is a particular strength.

Consistency between appearance and environmental strategy
The sustainability strategy has been integrated in the proposal in a convincing manner. It is clear how the results of the environmental studies have had a direct impact on the design, and the given documentation is credible and fulfilling. The result is consistent in this very important matter.

Consistency between landmark and urban and workplace qualities
The design result is that of an elegant expression. The building now is well proportioned in the context of the immediate surroundings. Shaping the corners shows good craftsmanship. With the central, green “shard”, the building attains a three-dimensional appearance, further strengthened by the acute division between the different sides. The building is a solitary landmark whose monumentality has no “back”. The strategy is both a safe and correct one for this particular point in town.

The transparent or translucent “orangery” on the peak provides beauty to the building as well as its tale. Vertical window bands and vertical gardens elegantly emphasise the vertically soaring will of the project.

Urban Mountain brings gardens and light throughout the interior of the project. This is achieved without compromising stressed existing bearings or at the cost of valuable rental space. The achievement is that the Mountain and garden story permeates the interior and provides pleasant working environment, providing natural ventilation, air-cleaning and nice vistas. No other proposal has managed to merge all these needs so well under one consistent concept.

Ground level public areas // central station connectivity // urban foundation
Ground level and lower floors solutions are consistent and interesting, but can always be improved. With an emerging mall concept the lower floors will surely see changing solutions.

More importantly, new connections are shown from existing underground connections to Oslo Central Station and the Metro. 565 bike parking spaces are shown, 60% of these in an automated underground bike park.

2.3.4 Summary and Recommendations

Urban Mountain stands out as a winner for two important reasons. It consistently scores above the other entries in terms of innovative solutions for sustainability and environmental strategies. And it merges architectural design and environmental strategies in a manner no other entry quite reaches.

The name hints at “the tallest”. However, a Mountain is more than its height. The Mountain’s significance for the urban context should be given heed in further work. A project ambition should be to contribute more to the microclimate than now. The building can potentially have a great positive impact on its surroundings. Therefore one needs to further investigate daylight, refraction, degree of façade openness, wind conditions etc.

In the further work one clearly must involve universities and centres of research in co-operation on the various gardens and their influence on the interior climate. It is a bold strategy to undertake the development of an as yet uncharted field as is the plants’ ability to clean the air and reduce its CO_2 content.

The remaining three proposals are listed in alphabetical order.

2.4 A WELL TAILORED SUIT

The main principle is to extend the building in the north and extend the two towers (east and west) vertically by tilting the roofs. The façade is fully re-wrapped. Atriums provide daylight deeper into the cores. The north façades are partially tilted to create a distinct architectural character. With changes in the window openings the Posthuset will achieve a very different appearance.

Added floor space amounts to 18.800 m^2.

2.4.1 Sustainability and Environmental Quality

Façade, Solar Screening and Daylight
Façades have triple glazing with windowpanes free of mullions, U=0,8. Window sizes depend on demand; orientation, depths & use of space inside, so that the façade will change from very homogenous to a non-repetitive look. Insulation panels are 50 mm with the same performance as Rockwool 250 mm. The space gain is 40m^2 per floor. Solar shading is provided by perforated indoor roller blinds.

The leap to vacuum insulation is new since Stage 1. Advantages are lighter wall weights and more floor space, allowing for heightened area efficiency. Indoor solar screens are contrary to Norwegian Building Codes and will give high cooling loads. This is not accounted for in the provided energy calculations, where outside screens are used in the energy calculation model.

Triple silver glazing give increased light transmission. Fixed, integrated light shelves will enhance daylight. Also, atria throughout the building increase daylight performance.

Energy Demand and Supply, Ventilation
Two boreholes cover free cooling purposes. On peak days, TurboCor air-cooled chillers will be used. Heat recovery comes form data centre and shower trays. Solar collectors on East tower rooftop provide 44% of the DHW, Daily Hot-water Demand on 930m^2. High-efficiency Oxford PV collectors are integrated in the glass on all facades. A food bio-digester will produce 35.000 kWh of electricity and 75.000 kWh heat per year. The solution is quite similar to Stage 1, with some additional elements. The weakness could be that too many ideas are used simultaneously. A less complex mix should be sought.

Hybrid ventilation with mixed mode strategy is proposed. With suitable conditions, the mechanical plant will shut down. TABS are also proposed, and seen as a good solution. The total net energy demand is calculated to 72,3kWh/m^2/y, but on the basis of outside shading while the text says indoor. There are other discrepancies as well between text and calculations.

The entry has a proposal for a smart grid system, whereby the building learns from users in real-time detections of all aspects of the daily use. This would enable a optimising of ventilation, heating and cooling and other energy-consuming factors.

Materials

Large quantities of concrete and reinforced steel bring a relatively high emission level, somewhat compensated by reduced quantities of construction steel. The largest posts in the C2C module are concrete constructions and windows. As with other proposals, there is a significant potential for reduction by targeting interior materials.

Wooden profiles are used for the façade. This may prove contrary to Norwegian codes due to fire demands (cooling zones between floors). Also, maintenance may prove difficult and costly.

BREEAM-NOR
The pre-analysis shows 89-90% for office and retail, with a good margin for BREEAM Outstanding. Good work has been done on the BREEAM Strategy, and how to meet high goals is well explained.

Ecology, Biodiversity Strategy
There is an ornamental roof garden, planter pockets, and climbing plants on the outer skin of the building. There is a water strategy, including grey-water and rainwater.

C2C Strategy
On-site reuse and recycling: Metal cassettes are used as cladding in the new façade, existing glass for partitioning walls. 30-40% concrete waste is intended used in new concrete. Gypsum and timber: 100% and 90% respectively in new boards. The team proposes to partner with a local gypsum recycling company for production.

The new façade is built for easy dismantling and represents a flexible system of old and new components. The application of vacuum isolation is seen as clearly innovative and with great potentials.

Conclusion
Many good ideas point to a mix of innovative solutions and good, common sense. New technologies are being tested for applicability in this proposal. The Jury finds this commendable. This is the only team that advocates the use of vacuum insulation, The energy solution description is very good but may be too complex, with very many different good ideas. They can be focussed in later stages if need be.

The team has a thorough reuse/recycling strategy for main materials. Timber spandrels for façade use in environmentally positive but must be analysed for robustness in Norwegian climates. A high quantity of concrete increases emission levels.

This proposal consistently achieves high scores on innovation and environmental indicators. But it does not go beyond a high average.

2.4.2 Criteria Group 2 Market and Feasibility

Added areas

The proposal means an addition of 18.800 m^2 to the existing floor space. This is one of the lowest in the competition.

Structural Principles
Extensions amount to one extra floor to reach 27, including a roof garden and restaurant ob the east wing tower. This may launch constructive reinforcements.

The new façade is tilted and has tilted columns. This results in a need for the floor slabs to absorb horizontal loads, which might necessitate beams at right angles to the façades. Shear walls may provide additional capacity but they are eccentrically positioned. The western addition is slender and must be strengthened.

Large openings in existing U1, 1st and 2nd floors are not easy to realise.

The shown solutions can be built but the tilted walls raise concerns. Solutions, necessitated by the particular shapes, are surely possible but may prove costly.

Construction Process
As with the other proposals, A Well Tailored Suit does not present any construction process problems that in any way are un-surmountable.

Market Standing and Costs
Market specialists have pointed to A Well Tailored Suit as having the kind of architectural quality that seems to be a hit among tenants. Architectural quality systematically scores high on surveys of customer preferences. However, the cost analysis shows that the proposal implies expenses beyond what is feasible and will need to be "slimmed" if building it is to be undertaken.

2.4.3 Criteria Group 3 Architecture, Urbanism and Design

Landmark // Icon Quality
The proposal shows a retrofitted landmark that has been given new elegance in shape and bearing, and a new, façade expressivity that is promising. Compared to all the visual dynamics of the adjacent waterfront development, the measures may prove to wanting if Landmark and Icon are to be keys. The project seems to be lacking of an architectural vision. This weakens its potential. The building is lacking of clarity and sharpness in the building design, which could support the architectural concept. Postbygget's potential is not so much in re-cladding as in a reinterpretation of the modern monument. A Well Tailored Suit has undoubted architectural qualities, but might not fully meet what would make it a truly great reinterpretation.

Consistency between appearance and environmental strategy
Features of the environmental strategies are apparent but not on a systematic basis. They are rather mere elements, as in the use of wood in spandrels, roof gardens and vertical climber plants.

Consistency between landmark and urban and workplace environment

The horizontal window bands provide excellent vistas from inside the working environment. Here, landmark and workplace qualities are definitely consistent. However, the continuous panes have not the necessary stiffness and will not withstand wind suction and pressure without reinforcement. This might, as we often see, ruin sideways vistas.

As the projects lacks one particular environmental element that epitomises it, consistency between an unclear landmark quality and the workspace environment is very difficult to establish, and the same can be said for the urban environment. The project lacks the nerve that would enable this.

Ground level public areas // central station connectivity // urban foundation
New direct connections are shown to Oslo Central Station and the Metro, and to the Byporten and KLP malls and office blocks. New big stairs between 1 and U1 greatly improve pedestrian flows. Connectivity is very good as is the potential a great solution.

1000 indoor bicycle parking spaces are accessed via a ramp. This number is far above any other proposal.

The team proposes a system of future shopping with the use of digital tools, with rapid adaptations to different customers. It allows for more open and conductive shopping areas based on rapid home delivery, with reductions of on-site storage, vastly more efficient use of space. This would also facilitate rapid changes of purpose, given for example changing market conditions.

2.4.4 Summary

A Well Tailored Suit has many very good qualities. It has maintained its position among the top four entries by providing a number of very interesting technological and innovative proposals. It scores very well on several environmental indicators and has a very high average score. But this high-average consistency fails to soar when that is what is crucial for a winner. The project has not succeeded in establishing a credible vision and concept that is consistent on all levels in demand.

2.5 HARVEST

This is the world's highest wooden structure. The essential structure uses massive timber element. In terms of innovative eager, no other proposal comes near. The proposal is well documented and argues the case well. New floor areas amount to 23.700m^2.

2.5.1 Sustainability and Environmental Quality

Façade, Solar Screening and Daylight
There are minimal changes to the existing façade. In this respect, changes since Stage 1 are considerable. Existing windows are kept, but tom the south 1/3 are replaced by Aerogel panels. New windows have triple glazing.

There is no outer solar shading. Surplus heat is to be let n and harvested for storage. Warm air from inside blinds is digested by slightly water-cooled active beams running along the inner façade. The solution probably violates Norwegian building codes so one must probably apply for exceptions. The solution, however, is interesting and innovative and could well be successfully argued, since the very principle of "harvest" defies the basis for the codes.

Daylight provision is simply based on large windows.

Energy Demand and Supply, Ventilation
The heating and cooling strategy is convincing and quite innovative. It is mainly based on storing surplus heating (again, harvesting heat), and cooling in excess periods in DTES and ice water. The system is much better explained now that in Stage 1. The use of ice/water storage is an interesting idea, quite innovative in Norway. Precedent examples are needed.

Hybrid ventilation will utilise predominant winds from south by opening windows to he north on warm days. The team claims that today's shafts, slightly undersized by present standards, will be sufficient. A rim of under-floor pipes along the outer façade will prevent cold draught.

Existing vent rooms on each floor will be used, improving heat exchangers and new tail coils. Fresh air inlets will be fitted on both north and south façades. Cooling by pumping water rather than air reduces air volumes. The innovative measures rest on using existing infrastructure with minimal interventions. This is very well presented and argued.

This team does not provide the required SIMIEN calculation because they claim it is not particularly applicable to their system. Instead they use TRNSYS, showing that requirements in passive house standards are met. Some, however, are possibly not met. A passive house standard is therefore probably not achieved according to Norwegian standards.

BREEAM-NOR
The team claims that 122 out of 128 credits are available, provided that Entra takes charge of issues outside the consultant's control. They have provided an analysis of lower ambition where they end up with Excellent.

Ecology, Biodiversity Strategy
There is a small, public roof terrace and a semi-intensive green roof. A roof terrace greenhouse produces herbs and vegetables for the rooftop restaurant. Office walls have interior vegetation (green walls). This also contributes to reducing thermal loads. These are good proposals.

C2C Strategy
The team proposes to conduct a reuse-/recycle assessment. Most of the existing façade is reused. Glass from north façade is used for protection of the top of the wet tower. Aluminium is reused for partition walls, and scrap alu is recycled.

Locally produced wood is used for structural and panel elements. The new glass on the north façade is C2C certified. Gold certified hycrete admixtures will be applied in concrete.

The team presents its c2c strategy clearly and it seems well thought through. Timber for structure and panel elements scores high in a C2C context. They have investigated potential for local production, essential to the environmental benefit of the strategy.

The massive reuse of the façade and removal materials is excellent. To euse glazing for security glass is unique to this team. The C2C strategy is very good.

Conclusion
The proposal has two innovative elements of staggering proportions. One is using massive timber elements as the essential structure in high-rise building. The other is the active house concept. The ventilation and heating concept of Harvest is highly interesting and innovative. BREEAM scores are “Excellent” but may reach Outstanding. Harvest is among the better in describing biodiversity. High reuse levels result in comparatively low emission levels. The C2C strategy is very good.

2.5.2 Criteria Group 2 Market and Feasibility

Added areas
The wooden structures provide 23.700 m^2 added floor space to the north and in vertical extensions above the present top floor. It is the highest addition of the competition.

Structural Principles
The structural challenge in this proposal is formidable. Until now the tallest wooden building in Norway has 8 floors. A 14-floors cooperative housing project is planned for completion in the autumn of 2014 in Bergen. Harvest is a research project aimed at doubling this.

Static bearing capacity has been satisfactorily discussed in the presented material and in addition discussed in a meeting between the team and the Jury advisors.

Oscillation and vibrations are problems in lightweight constructions. Humans feel acceleration, more than movement. Oscillation thus leads to unease and seasickness. The report does not sufficiently discuss this problem.

Movement in relation to the existing building is another problem. The wooden structure and the existing massive concrete building will have deviating movements during wind and earthquake loads. To alleviate differences, fluid viscous dampers are proposed at strategic points between the two constructions. The Jury has no prior knowledge of any use of this solution, but they influence both forces between the buildings and movements and oscillations in the extension. We estimate that it is very difficult to achieve the effect wanted through the use of dampers.

The material argues the case for fire protection well in terms of existing codes, but the rules were not written with high-ride wooden structures in mind.

The conclusion is that one must be cautious before undertaking a research-and-development project for a wooden building of these mind-boggling proportions. The risk is very high indeed, both in terms of economy and constructions.

Construction Process
Given that the undertaking is feasible, the construction and assembly of the building itself should not be too difficult. However, it is highly likely that no contractor (in Norway) will provide guarantees for time, completion or against later problems. simply because of the experimental character of the design.

Market Standing
The risk, then, must be considered too high for a commercial owner/developer like Entra. And for all the elegance, conceptual strength and unquestionable innovation of this unique project proposal, the risk factor makes it impossible for Entra to build Harvest.

That being said, the architecture distinguishes the building in a positive way. The tallest timber-building story lends great impetus to marketing. This would indeed be a tempting story to promote for potential tenants, nationally and internationally.

2.5.3 Criteria Group 3 Architecture, Urbanism and Design

Landmark // Icon Quality
The proposal has undergone substantial changes since Stage 1. Where it formerly had an unresolved appearance and a closed form, it now has constructive expressive clarity and an openness that speaks of the visual quality of the landmark monument. Much of the existing facades are kept, but the taller wooden structure adds a significant iconic quality to the building.

Consistency between appearance and environmental strategy
The timber structure as an add-on element of great proportions clearly exposes its structural qualities. The constructive principle is an iconographic main feature of the new north elevation. The south elevation will remain much as it is seen from a distance today.

The harvest concept allows for large windowpanes and lends openness in line of the fact that this is a high-rise with great visual qualities.

Consistency between landmark and urban and workplace environment
The solution has improved considerably in relation with the immediate urban surrounding. While bordering on the abrasive in Stage 1 it now meets surroundings with openness and high quality access areas. Pedestrian flows are well planned in the lower floors, and a rooftop restaurant speaks of a vertical urbanism quality that is promising.

The workplace environment will have timber structures exposed. The harvest concept allows for high ceilings and large windows, so that the vista quality is enhanced. The concept gives clarity, openness and views to the workplace environment.

Ground level public areas // central station connectivity // urban foundation
New connections are shown for Oslo central Station, the Metro and adjacent shopping malls. 200 inside bicycle parking spaces are accessed by elevators. This is too few.

The Ground level is well connected to the street and other pedestrian flow levels.

2.5.4 Summary

Harvest has improved greatly from Stage 1 to Stage 2. It has an expressive strength with clarity that gives it great character. The qualities of the timber structure are well explained and argued.

However, some potential problems remain to be fully investigated. The difference between the two constructive systems is very difficult to bridge. Risk plays a decisive role. it is simply to big for a commercial office building extension.

2.6 PostZERO²

Two distinct tower extensions dominate the north side of the complex. The eastern one extends well above the existing to a total of 32 floors, while the western one is lower than the existing with 23 floors. This is the so-called 2020 alternative that the Jury has been asked to adjudicate. A 2030 option shows an addition of 8 new floors above the existing west tower and has not been part of the discussions.

The additions amount to some 18.100 m^2 of added floor space.

2.6.1 Sustainability and Environmental Quality

Façade, Solar Screening and Daylight
Façades are adaptive, with different characteristics in different direction. Triple insulation glass units with thermal brakes are used. Windows are larger to the north than elsewhere. The south side has a closed cavity façade, a compact, double-skin solution (triple glazing + single glazing). Opaque areas have no double façade. Other façades have single skin, triple glazing. Shading solutions are adapted for each façade: partly vertical, movable lamellas, partly vertical micro shade solar shading adapted to sun movement, built into the glazing units, partly vertical exterior fins.

The solutions for solar shading are well thought through and argued. It is a good idea to use different solutions in different directions. Microshade products might reduce daylight and must be further investigated for effects. Daylight simulations have been conducted.

Energy Demand and Supply, Ventilation
The proposal does not advocate solar radiation systems until technology, clean production and recyclability are greatly improved. This is consistent. However, such systems are seen as possible future options.

A large thermal ice storage unit (2100m3) is found in U2. It will be used directly for cooling and will interact with a heat pump for heating. Peak loads in winter will be solved with available District Heating. The major advantage of the strategy is that it is low-tech, with only a few changes to the existing system.

This is a simpler strategy with fewer components than some other teams have proposed. It seems like a very good strategy. The use of ice/water storage is an interesting idea and quite innovative in Norway.

The team does not advocate the use of natural ventilation because the building is known to have problems with draughts, and poor air quality in the lower parts. The system rests on existing installations but with some improvements. TABS are included.

The strategy is good. TABS are a good solution for this purpose but may cause adverse noise problems throughout construction in installing. The SIMIEN file divides the building into separate zones. This is excellent and shows that passive house requirements may be met.

The innovative edge consists of adaptive re-use (recognise value in what already exists), organic growth/just in time management, and learning from zero – interaction between users and the building generates a usable flow of information.

Materials
The concept rests on extensive re-use of existing solutions and components. This is a good strategy. The windows principles may be used without negatively challenging weight load limitations.

BREEAM-NOR
postZero^2 has the best BREEAM strategy of the competition, because of a higher level of details. The baseline proposal makes for Excellent (81%) and two key scenarios aim for Outstanding, either by an extra focus on energy (88%9 and another for materials (90%). The aim is an immediate score of Excellent and a drive towards Outstanding following additional installations at a later date.

This is an excellent way of using BREEAM. It may be necessary to work this way since the retrofitting partially will emerge over time, adapted to tenant behaviour.

Ecology, Biodiversity Strategy
The east wall is a biodiversity wall. Re-use of aluminium panels will host bird nests (small birds and small falcons), plus bee colonies. The team correctly points out the potential of higher yields in urban ecology and wants the project to reflect this phenomenon. The proposal is very good in this aspect.

C2C Strategy
Reuse of façade materials and solutions gives the proposal an edge. The C2C strategy is excellent, with most of the façade being reused (structural façade elements, aluminium panels for biodiversity wall), adaptive façade, and lightweight slabs (HBV system, timber concrete composite).

Membranes may be developed from bioplastics (dependant on producer willingness).

The team presents a detailed C2C strategy for retrofitting and new constructions. They introduce an interesting idea of drawing inspiration from the car industry in terms of design for disassembly, so-called lean manufacturing.

Conclusion
postZERO^2 shows excellence in many fields of this competition. The proposal is very good, and it is convincingly presented. Many ideas should be pursued, irrespective of the outcome of the competition.

This team has provided the best BREEAM strategy of the competition, an example to be followed in future work with the BREEAM methodology. The proposal is convincing regarding façade and solar protection solutions. The simplified double façade may meet weight load limitations.

Lack of complexity as a principle (energy deliverance), i.e. fewer components, adds a robustness that might be crucial to implementation. Timber concrete slab structures results in a relatively reduced level of emissions.

2.6.2 Criteria Group 2 Market and Feasibility

Added areas
The added areas amount to some 18.100 m2 of new floor space. The number is the lowest f the competition.

Structural Principles and Construction Process
The added towers are narrow, 12 and 8 metres and may be too “thin” for successful stiffness. Other proposals have greater depths. If a difference in the analysis of property limitations is the reason, this project could be adapted and achieve a bigger floor area gain in the process. But all in all the structural system is satisfactory and well documented.

The proposal for how one can undertake both the new construction and the retrofitting is very good. Retrofitting over time, which is a likely scenario, is well discussed.

Market Standing
New and very good connections are established to the Central Station and Metro, and to the neighbouring malls of Byporten (west) and Krystallklar (KLP, east). The solutions for the ground floor bode well commercially.

The automated bicycleparking from Stage 1 is replaced by a ramp entrance to 350 bicycle in-door parking spaces. The outside has an additional 60 spaces.

2.6.3 Criteria Group 3 Architecture, Urbanism and Design

Landmark // Icon Quality
The biggest weakness of postZERO^2 is its lack of reinterpretation ambition. One might say that the city of Oslo and its inhabitants are not presented with enough change and development (unless the 2030 option is activated, but this was not part of the entry to be adjudicated).

There is a lack of architectural vision, which must be clear and will substantiate the wanted transformation of the Posthuset landmark. The new proposal lacks foundation. The resulting lack of change in the basic design and the construction leads to commonness that, in spite of the format, is somewhat “boring”.

Consistency between appearance, environmental strategy and urban setting
The sustainability strategy is well documented but fails to connect to the building’s design. Instead, the sustainability concept should have been employed as a concrete tool in generating and optimising the design.

Floor plans have high quality in terms of methodology and energy technology, but architecturally the building is lacking of an ambition and nerve that would lend to its character and justify its presence in the urban setting. This hems integration. The setting invites to a building that could kick-start the redevelopment of the Central Station’s north side, but the kick remains absent.

Consistency between landmark and workplace environment

The floor plans and vista qualities are excellent and very well argued. The landmark remains a dominant feature in the interior.

Ground level public areas // central station connectivity // urban foundation
postZERO^2 shows excellence in the way the project hooks on to the massive movements in and between the Central Station, Metro, adjacent malls, and street level potential. This is the best of the competition. What is now a pitifully under-communicated plaza is given credibility as an urban node of high commercial and communications quality.

2.6.4 Summary

postZERO^2 is, in many ways, an excellent project. Environmental strategies are among the very best of the competition. Documentation throughout is excellent. Low scores on added area is probably easily mended. Sustainability is unquestionable, but unfortunately lacks integration in the architecture of the landmark.

3 APPENDIX I
JURY REMARKS AND RECOMMENDATIONS AFTER STAGE 1, EXCERPT

The Jury's Remarks at the Launch of Stage 2

Completion of Stage 1
Whilst Stage 1 can be seen as more conceptual, Stage 2 will move to design, much more oriented towards what we know as a project competition. This implies both a sharper focus on details and higher expectations on synthesis, holistic solutions. The participant teams should bear this in mind, even though the Jury remarks may seem to emphasise documentation rather than design qualities.

Based on the Stage 1 proposals discussions, the jury has formulated general and specific remarks. These are to be seen as programmatic advice and requirements for Stage 2 of the competition, as an addition to the brief.

The general remarks will go to all 4 teams. The specific ones will be sent separately to each.

The remarks are structured in accordance with the 3 assessment criteria groups as listed in chapter 4 in the competition brief, with reference to the NordicBuilt Charter. Cradle to Cradle and FutureBuilt principles are mentioned particularly.

The Jury refers to the guidelines as set down in chapter 3. It is important that the contestants bear all these in mind, as Stage 2 will require far more in-depth work on submission materials.

General Remarks

Nordic Built
The proposals must explicitly meet Nordic Built Charter requirements. The teams must explain how this is done.

Requirement/documentation Stage 2:
A chapter is required that discusses how, and with what emphasis, the proposal meets the 10 Charter point requirements, in text and (if relevant) diagrams.

Criteria Group 1: Innovation
In general, innovation needs more attention. This is a particular requirement in issues concerning the environmental and sustainability profile of the proposals.
But it also should be emphasised in the other criteria groups. The contestants should feel free to formulate innovation strategies and specify how these are reflected in the entry proposals.

Requirement/documentation Stage 2:

Formulate the innovation profile of the entry proposal. Specify the 3 most important innovative elements (others may be added) concerning environment and sustainability, plus additional ones for the two additional criteria groups.

Sustainability and Environmental Quality
Generally, calculations from Stage 1 must be reviewed and substantiated.

Sustainability strategy

All four entries show potential in fulfilling the Charter and criteria. At this stage, however, they fall short of answering satisfactorily to important aspects of the competition. In particular this goes for a more in-depth explanation of the sustainability strategy.

Requirement Stage 2:

The Sustainability Strategy must be reformulated or at least updated.

It must be convincingly credible, i.e. not merely show a comprehensive strategy, but go much deeper into documenting that the ambitions are plausibly fulfilled.

Net Energy Demand

Project goal Stage 2:

As a minimum, the project should meet the Norwegian passive house requirements.

Requirement/documentation Stage 2:

The teams should prepare an energy calculation to substantiate that their solution fulfils the Norwegian passive house requirements. The calculations should be prepared according to Norwegian calculation standards (NS 3701/NS 3031).

Comment: To make the comparison between the various teams as fair as possible, it is desirable that all teams use the same energy calculation tool. Accordingly, we recommend all the teams to use the newest version of the Norwegian calculation tool, SIMIEN, where Norwegian calculation rules and passive house standard to a large extent is built into the tool. If use of SIMIEN is not possible, please contact the jury secretary and provide a proposal for an alternative solution for the energy calculations. The jury will consider if this solution can be accepted.

The teams should submit the following documentation:

- The SIMIEN-file in smi-format.
- The report “Passivhusevaluering” from SIMIEN, where the field “Documentation” should be filled out with comments.
- Other documents/reports with more details about the calculation will be seen as an advantage.
- Other calculation tools accepted by the jury will imply documentation on a comparable level.

To ensure that all teams have the same starting point for the energy calculations, the teams are supplied with the SIMIEN-file for the existing building, as it is modelled today. This calculation is made some time ago for a different purpose, and the organiser cannot guarantee that there are no mistakes in the provided model. The existing RIMI grocery store is not included in the provided model.

NB: The results from the energy calculation should also be used as an input for the BREEAM pre-analysis.

Energy supply and double façades

Project Goal Stage 2:

Near Zero Energy Building Level

Requirement/documentation Stage 2:

We ask the teams to be more specific about the chosen energy solutions.

A written account accompanied by illustrative material etc.

Comment:

- Boreholes in the ground below Posthuset may encounter difficulties due to a proficiency of existing tunnels etc and high probability for new future tunnels in this area. If, in spite of this, the proposals are upheld, the teams that opt for this solution must be specific about where one can safely drill holes, show that the capacity is sufficient for this to be worthwhile, and calculate effects on sustainable levels.
- The results from the energy calculations (see above) should be used as a basis for optimizing energy solutions, and provide estimates on how large parts of the energy demand will be met by the various energy solutions. Based on this, the estimated area-demand for the energy equipment (area in basement, area in other floors, and surface area if the teams propose use of PV and solar collectors) should be listed. This includes area for energy storage systems (if proposed).
- For technologies that are not standard commodities, provide illustrative and other information on reference projects, test results etc.
- If PV, solar collectors and/or double facades are proposed, make an account of how this will influence the capacity of the construction (no (significantly) added weight to the present construction is acceptable).

Construction Materials

Project goal:

"A 50% reduction of carbon emissions from the use of energy, materials and transportation".

Recommendation

In Stage 2 a climate account is to be conducted with the use of the material calculation template used in Stage 1. The intention is to facilitate the evaluation process by ensuring that all calculations are based on the same methodology and assumptions.

Requirement Stage 2:

To obtain the highest level of accuracy in the climate account, the teams should present a specified construction strategy in terms of material consumption for the most important construction elements, where feasibility is convincingly documented (key words: façade, structure, technical systems, roof and floors).

The strategies must include the following information:

- A carbon emissions calculator, and answers to these questions:
- What materials will be used?
- Where are they to be used?
- What are the specific properties of these materials (recycling grade, type of concrete etc)?

Furthermore, the teams should continue to investigate strategies for reducing the total emission level. The two main approaches constitute the option of applying materials of low embedded emission (see material calculator for information on emission factors for different material properties), and/or technology that require reduced material volumes.

BREEAM-NOR Categorisation

Project goal Stage 2:

BREEAM-NOR, minimum Excellent. "Outstanding" is a goal to be actively pursued.

Requirement Stage 2:

The teams should prepare a BREEAM-NOR pre-analysis to substantiate that the project goal regarding BREEAM-categorization is met.
The pre-analysis tool that should be used can be downloaded (in Norwegian) from NGBC's web page; http://www.ngbc.no/index.php?q=content/verkt%C3%B8y

Documentation:

The teams should provide the following documentation:

- Brief account of how BREEAM Outstanding is (or is not) possible.
- Pre-analysis form in Excel-format.
- Printout (pdf) of "Prosjektdetaljer, "Pre-analyse" and "Resultat".

Ecology/Biodiversity

Project goal:

Biodiversity is not explicitly mentioned in the guidelines but can be seen as included in the BREEAM ambitions.

Requirement Stage 2:

Teams that have omitted formulating a strategy for biodiversity should critically assess the potential.

Accordingly, we ask the teams to provide some more information about their solutions on this topic. All should discuss biodiversity with respect to actual gain, added weight, and ambience and profile.

Documentation:

- The teams should show how ecological elements are integrated in the project.
- The teams should describe and if possible quantify how such elements will contribute to the building's functionality, such as storm-water retention, heat control, acoustics, aesthetics etc.
- A table showing all outdoors green (planted) areas (horizontally and vertically) with assumed number of species per area should be presented.

Various Topics

Sun-shading

Some have sun shading between the glasses. The south façade cannot bear additional weight, so a new, double façade is not possible without considerable weight-reducing measures. Shading between the glass panes in a one-layer façade is problematic for reasons of heat generations, technical failures and maintenance.

Solar Energy

All promote photovoltaic cells in one form or another. Some have solar thermal energy collectors.

Requirement:

The annual energy production from solar energy should be documented through PVsyst or similar programs.

Heat Pumps

These are commonly proposed for supplying heat. Various sources are named. Some use ground heat, see comments under "Energy supply and double façades" above.

Daylight

Daylight measures must be documented. One must strive to balance window areas with energy considerations.

Cradle to Cradle

Project goal:

*"Implementation of Cradle to Cradle strategies for at least 3 construction materials"***,** that will over time allow BG14 to be a lighthouse in the efforts of eliminating the concept of waste and make the building a positive contributor to its surroundings.

Recommendation Stage 2:

The teams have included several C2C strategies in their contributions, some specific and some relatively vague. In Stage 2 the focus will be the team's ability to specify and document the possibility of undertaking the proposed strategies (emphasis on the significance of the different C2C strategies in the context of total material volume).

FutureBuilt

All four entries have the potential to become FutureBuilt projects, but they need to be refined. Essential documentation is covered under above-mentioned requirements. In addition the teams should take note of the following:

Transportation

The proposals must show effective connections and accessibility with the metro system, Oslo Central Station, and public transport in Biskop Gunnerus gate (and Jernbanetorget). This is specifically addressed under Criteria Group 3 below, Public ground level areas. All should solve bicycle access to underground parking with very clearly visible entrance points. The ambition is to use this for promotion, as a statement. Also, one should prioritise outdoors bike parking (common bicycles as well as transport bikes) for visitors to the offices as well as the malls.

Precedence quality

FutureBuilt has a criterion on precedence: "Precedence projects must be innovative and well suited for visitor tours and profiling."

Requirement:

The submission should clearly state the precedence quality(-ies) of the entry; what is seen as the innovative edge and what is its profiling potential (for Entra, for NordicBuilt and for FutureBuilt).

Criteria Group 2: Market and Economy

In Stage 2 the teams must focus an improvement to the total economy of the proposals. All four have improvement potentials but need to balance construction costs with area gain and improved market standing.

General Remarks

One should be careful about cutting into existing constructions, at least without balancing this with added areas. Costs are high and statics are complicated.

When generating floor plans, the teams should show different area categories (diagrammatic colour codes?). These are significant ingredients in the total economy of the building. Areas for rent should be aimed at maximum capacity and area efficiency.

The south façade is critical. Firstly, it is important to improve comfort and avoid overheating on sunny days. Secondly, added weights are not an option, simplification is a key.

Reuse of technical facilities is a positive factor in the overall economy.
As a rough key one can say that costs for the existing building refurbishment should be reduced by 20%, and for the additions by at least 10%, in order to approach feasibility.

Statics

Requirement Stage 2:

All teams must submit a realistic static study (form to be chosen by each), one that will convince experts of realism at this level. Both vertical and horizontal loads must be discussed.

Façades

For the Stage 2 work, the teams must bear in mind the following: one must seek to balance façade intervention costs with incomes, both from increased floor space, increased area efficiency, and potential increased rents from improved architectural quality.

Requirement Stage 2:
A chapter discussing the above relations with a tentative conclusion.

Construction Process

Requirement Stage 2:

In schematic/diagrammatic form, the teams should explain how they envisage the construction process, focused on realism and practical management. The aim is to reduce tenant inconvenience and ensure optimal use of the building during construction.

Criteria Group 3: Architecture, Urbanism and Design

General Remarks

The Landmark

The existing building is a landmark for Oslo. It has qualities and signal values that the new proposals must include in their visions. See also the NordicBuilt Charter Principles, point 5.

Requirement/Documentation Stage 2:

The teams are asked to submit a vision of how their proposal meets the architectural challenge. What are the three most important elements that make the proposal a precedent in terms of innovative and aesthetically improved, environmentally friendly design?

Façades

All teams need to work more on façades, both on the architecture and technical elements, on shading, and on potential energy benefits.

Requirement/Documentation Stage 2:

Façades must be documented for all 4 elevations. This is done through perspectives that clearly depict north, west, south and east façades as seen from strategic points of view. All will be

provided with photo image bases. The teams are free to use these or similar ones that approximately caver the same viewpoints.

Materials must be discussed with respect to reuse strategy. Façades must be documented for architectural expression and landmark potential, innovative quality, shading, energy potential and other matters of choice. Details must be shown, scale and form optional.

For innovative solutions, provide documentation of test results, precedent examples etc.

Public Ground Level Areas

Postbygget is situated adjacent to Oslo's (and indeed Norway's) largest public flow area, neighbouring strong mall areas such as Byporten, Oslo City and the upcoming KLP Mall.

With the implicit extension, more elevators are needed. Capacities will be assessed later, since this is not merely a reflection of added floor space but also increased area efficiency.

Requirement Stage 2:

The contestants are asked to find solutions to both the need to improve connectivity with the mass transport elements, and the profile of the public areas of Postbygget.

Documentation:

1. Urban Connectivity

Show through diagrams how the proposal improves the connections between the entrance and mall areas, and the flows of commuters through Oslo S, the T-banen and street level public transport, including visitors by and large.

2. Elevators

More elevators are to be shown. The requirement is a minimum of 2, externally or internally positioned.

3. Shopping Centre Profile

Formulate an explicit concept of how Postbygget relates to the commercial shopping profile of the adjacent areas, one that lends credibility to a clear commercial identity for Postbygget's mall areas.

4. Logistics

More trade means new needs for loading areas. All must formulate a strategy for loading and waste management with all that this implies in logistical terms. Bear in mind need for cooled waste-rooms for restaurants and food malls, recycling central etc.

Specific Remarks

Specific remarks are, at this stage, limited to each of the four final contestants.

The 22 entries that have not been chose for the final stage of the Norwegian competition will individually receive brief remarks from the Jury.

Stage 2 Order

Winner Announcement, Meeting

Stage 1 winners were presented to the public at the "Entra Day" Conference in Oslo on Thursday, April 4th.
On April 10th, Entra representatives met all 4 teams one by one for discussions the general and specific remarks, sent the teams in advance, and on Stage 2 work.

Mid-stage meeting

It has been agreed that the participating teams, at their own convenience, may meet with Entra and the team of advisers around the time of mid-stage, i.e. Mid May.
The initiative lies with each of the teams, not Entra or the Jury, and requires no coordinated action from the teams. Each can call the meeting at their convenience and are free to set the agenda. Entra will discuss the issues raised with the jury before the meeting. Questions that arise during the meeting will, if necessary, be answered quickly.
As with the meetings held after Stage 1, the teams will not meet the jury or representatives directly, but representatives of Entra and the team of specialists.

Submission of Entries, Stage 2

Submission of Stage 2 entries must be no later than Friday, June 28th at 15:00 by postal, courier or personal delivery to the Competition Secretary NAL, address and contacts as given in the Stage 1 Brief.

Required Competition Documents

Boards:
A maximum of 6 A1 boards, all clearly marked with sequence symbols.
Landscape or portrait orientation is the choice of the author.
Booklet A3, landscape orientation, one bound and one unbound.
The Booklet must contain all boards in addition to text and further illustrative material.
In accordance with the above General Remarks, include the following information (not excluding other issues and material), organised as chapters or otherwise clearly identifiable.

- NordicBuilt Charter compliance
- Innovation Profile
- Sustainability Strategy
- Energy Solutions
- Energy Calculator as required above
- Construction Strategy showing material consumption and carbon emissions calculator
- BREEAM Document showing how or whether "Outstanding" can be reached, and with the required Pre-analysis etc.
- Biodiversity Strategy
- Cradle to Cradle Strategy, specified for at least 3 key constructive materials
- Precedence Quality(-ies); innovative edge, profiling potential
- Statics Study, illustrated
- Façade costs, potential positive economical effects
- Construction Process
- Architectural Vision, including what makes this a precedent project
- Public Areas (Ground Levels and possibly other), especially:
    - Urban Connectivity
    - Shopping Centre/Commercial Profile
    - Elevators
    - Logistics

SPECIFIC REMARKS // A WELL-TAILORED SUIT

Separately, each team will receive a set of specific remarks. The remarks are aimed at pointing to issues that need to be addressed in more detail and/or improved in Stage 2 of the competition. Hence they reflect the jury's view on improvement potentials, not the full praise that has brought the four teams to Stage 2. The remarks are intended to guideline Stage 2 work in addition to the general remarks above.

The Jury Report after Stage 2 will reflect a more balanced evaluation of the entries.

Criteria Group 1

The building shall learn from its users by use of the ID cards. This needs a more thorough explanation/-documentation.

Sun-block system with blinds between the panes, without double façade: life span, maintenance etc must be discussed/documented. Examples of current products are welcomed, with documentation of the above.

Boreholes are seen as difficult due to the density of utility and other subterranean infrastructure. Documentation of how and where available areas can be used is necessary, also calculation of effects.

PV Cell electricity production must be calculated, area needs to be documented.

Biodiversity is lacking as an element. This should be addressed and documented.

BREEAM potential must be discussed and documented, targeting "Outstanding".

Criteria Group 2

Ventilation: documentation is needed for feasibility and functionality.
Cooling system may seem expensive – documentation is needed.
Upper floor extensions: critically low additions compared to costs.
New elevators needed.

Critical factor: large openings in existing construction: reducing rentable floor space and adding costs – needs to be assessed for simplification.

Constructive problems are seen as critical in the shown solution for added floor shapes to the north. The architectural solution is seen as highly significant for the new landmark, but this needs to be properly solved and documented, both statically and architecturally.

Criteria Group 3

Articulation of the 4 elevations: needs to be elaborated and detailed.

Daylight gains from the north façade principle need documentation.

Prefabricated materials: descriptive material seems to under-communicate a success story. It deserves better, needs a "winning" story in line with NordicBuilt ideals and Entra visions and values.

SPECIFIC REMARKS HARVEST

Separately, each team will receive a set of specific remarks. The remarks are aimed at pointing to issues that need to be addressed in more detail and/or improved in Stage 2 of the competition. Hence they reflect the jury's view on improvement potentials, not the full praise that has brought

the four teams to Stage 2. The remarks are intended to guideline Stage 2 work in addition to the general remarks above. The Jury Report after Stage 2 will reflect a more balanced evaluation of the entries.

Criteria Group 1

The absence of solar shading must, if upheld, be better argued, see demands for such in TEK10.
Daylight strategy must be made clear, and daylight qualities need to be improved.
Ice accumulation: check for size (floor space, volume).
Energy potential of windmills on the corners: needs better explanation and discussion of effect.
Production of electricity on façades must be calculated and documented.
Assess potential for hybrid ventilation / natural cross ventilation.
Biodiversity – description needed, see also roof garden.
BREEAM potential must be discussed/documented, targeting "Outstanding".

Criteria Group 2

The laminated wood construction needs to be realistically and convincingly documented. This is the entry's strongest single element and cannot be accepted as a weak point.
The terrace represents a critical load addition – how is this solved? Other excess loads?
Boreholes are seen as difficult due to the density of utility and other subterranean infrastructure. Documentation of how and where available areas can be used is necessary, also calculation of effects.
Replacement of all technical utilities is seen as very costly.
The new façade is seen as expensive (critical cost factor). Also: existing façade completely demolished, adding costs.

Criteria Group 3

The building lacks an overriding vision, particularly on its role and relation to the urban surroundings. The building has architectural shortcomings in its connections to the city and the hub. It gives a "closed" impression and isn't very forthcoming, a quality that is important for NordicBuilt as well as Entra. The team needs to formulate a vision for what the proposed measures aim at achieving, how it fits in with the activities it harbours, and how it symbolises Nordic profiles driven by innovation.

A strategy is needed for how one moves through the building in the public, lower level areas. The connection to Oslo S and the Metro system, and its massive people movement, must be made much clearer. Also, the connection to KLP lacks clarity.

The commercial element must be given an identity in order to function. Documentation on how level -1 is intended seems lacking, also documentation of logistics access (loading, unloading).

SPECIFIC REMARKS // postZERObygget

Separately, each team will receive a set of specific remarks. The remarks are aimed at pointing to issues that need to be addressed in more detail and/or improved in Stage 2 of the competition. Hence they reflect the jury's view on improvement potentials, not the full praise that has brought the four teams to Stage 2. The remarks are intended to guideline Stage 2 work in addition to the general remarks above.

The Jury Report after Stage 2 will reflect a more balanced evaluation of the entries.

Criteria Group 1

Sun-block system with blinds between the panes, without double façade: life span, maintenance etc must be discussed/documented. Examples of current products are welcomed, with documentation of the above.

U-values for the windows; can they be improved to 1,0 W/m2K or better?

Production of electricity on façade needs to be more convincingly discussed and documented.

Using Akerselva for cooling – this must be discussed for efficiency and documentation added.

Ice accumulation: check for size (floor space, volume).

Documentation needed for bioreactor and algae.

Daylight qualities need better description including use of fiberoptics.

Biodiversity – description is needed.

BREEAM potential must be discussed/documented, targeting “Outstanding”.

Criteria Group 2

There is some serious doubt on the feasibility of the western tower extension. If this alternative is maintained, sound constructive/statics documentation is needed.

Lower floor solution: the critical factor is costs versus income potential. This should be investigated.

More elevators are needed. Show how they service office floors.

Criteria Group 3

The team must choose which alternative to present.

As a possible consequence of the alternatives, the entry is weakened by the absence of a clear architectural vision. The building seems to lack ambition and nerve that would give it character and reason in the given setting. This must be taken very seriously in Stage 2.

Lobby and entrance, commercial areas:

Office lobby and entrance area on street level may seem excessively spacious. Costs element and risk of being “void” must be investigated, see above comment. The central ramp is very space demanding, the central “landscape” space needs better explanations.

Area needs for logistics access seem underestimated.
The mall area needs a clearer commercial identity. There are few large shopping units.
Food court on +4 is not well integrated in public area.
Access street to KLP shown as one-sided solution, not ideal for adjacent shops.
Movement between levels for people with handicap is challenging

SPECIFIC REMARKS URBAN MOUNTAIN

Separately, each team will receive a set of specific remarks. The remarks are aimed at pointing to issues that need to be addressed in more detail and/or improved in Stage 2 of the competition. Hence they reflect the jury’s view on improvement potentials, not the full praise that has brought the four teams to Stage 2. The remarks are intended to guideline Stage 2 work in addition to the general remarks above.

The Jury Report after Stage 2 will reflect a more balanced evaluation of the entries.

Criteria Group 1

Window area is critical and may be assessed for reduction.

The glass solution with 3 layers + 1 layer must be more convincingly argued.

Boreholes are seen as difficult due to the density of utility and other subterranean infrastructure. Documentation of how and where available areas can be used is necessary, also calculation of effects.

The energy potential of the windmills must be calculated/documented.

The ice accumulator must be more convincingly integrated in the energy strategy, floor space and volume needs must be shown.

Criteria Group 2

Existing façades are demolished and fully replaced – this raises the cost efficiency demand.

Critical factor: large openings (cuts) in existing construction: reducing rentable floor space and adding costs – needs to be assessed for modification.

Criteria Group 3

The compacted form of the building may threaten its present landmark quality. This could call for architectural modification, or at least improved documentation.

Atria, windows, layers solution needs to be the focus of a critical reassessment in order to improve their orchestration. A certain “unfinished” tendency to appear to have been generated by coincidence needs to be rectified. The three elements need a clear hierarchy of significance. The atria seem to be the most important and may be the strongest architectural asset.

There is a need for additional elevators but the existing ones must be retained, for reasons of costs, statics and construction, and capacity.

Lobby and entrance, commercial areas:

Needed: a strategy for how the building hooks on to the people movement from Oslo S and the Metro, as well as the KLP building.

Spacious atrium areas on street level must be more efficiently targeted at generating income.

Documentation of how level -1 is utilised is needed.

Documentation on logistics access is needed.

4 APPENDIX II
JURY PROTOCOL

NORDIC
BUILT

Juryen i NordicBuilt Challenge Norway
har i møte 29. august 2013 vedtatt
å utrope forslag "Urban Mountain"
til konkurransens vinner.
Vedtaket er enstemmig.