COMPETITION
HERLEV HOSPITAL

MASTERPLAN

NEW BUILDINGS

CONSULTANCY SERVICES

BRIEF
MAY 2010

A PATIENT-FRIENDLY, RATIONAL AND FUTURE-PROOF HOSPITAL

INVITATION

Herlev Hospital invites the prequalified competition entrants to participate in the design competition and tendering for consultancy services in relation to a masterplan for the long-term extension of the hospital and proposals for new building facilities for a general acute admissions area, a woman/child building and other facilities.

Herlev Hospital looks forward to receiving a number of inspirational proposals that can serve as a basis for continuing the work to expand the present hospital, creating an architecturally distinctive, functionally workable and flexible hospital complex.

Søren Rohde
Chief Executive, Herlev Hospital

INTRODUCTION TO THE BRIEF

The competition assignment comprises the following elements:

MASTERPLAN | Proposal for a masterplan (long-term and short-term development).

NEW BUILDINGS | Proposal for the specific design of the first part of the building project: General Acute Admissions and Woman/Child Building (Stage One).

CONSULTANCY SERVICES | Tender for the provision of consultancy services in connection with the realisation of Stage One.

The competition brief is quite comprehensive, as it is intended not only as a basis for a design proposal but should also enable entrants to form an impression of the assignment upon which they will be basing a tender for the subsequent consultancy services.

Prior to the preparation of the competition brief, a great deal of work was put into defining prerequisites, wishes and requirements for the contents and organisation of the new building facilities. In this connection, many staff groups invested considerable resources in describing the needs of each of the departments. The resulting material contains many good ideas and proposals that can be used in the forthcoming process but are too detailed to serve as a basis for the actual competition. In order to reduce the number of supplementary documents, the relevant information in the material has been incorporated into this competition brief.

The brief contains five main sections:

00 **SUMMARY** | Brief summary of information on the Herlev Hospital 2010 design competition.

01 **BACKGROUND** | Hospital planning, physical planning and plans for Herlev Hospital.

02 **ASSIGNMENT** | Masterplan, new building facilities and consultancy services.

03 **IMPLEMENTATION** | Budget, time frame and organisation.

04 **REGULATIONS** | Competition regulations.

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DVD with competition material

The brief is accompanied by a DVD containing

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SUMMARY

SECTION 1 | pages 17-21
A major restructuring of the hospital sector is currently being planned in Denmark. The rationale behind this restructuring is a need to enhance the quality of the therapy and treatment provided. Practice makes perfect, which is why certain treatments are generally being offered in fewer hospitals. Furthermore, the admission of acute patients requires a special preparedness at the hospitals.

Such preparedness is expensive, and a certain flow of patients is necessary for the associated operational costs to make financial sense. That is why the admission of acute patients is being concentrated at fewer hospitals and new shared acute admission wards are being established. In future, these wards will be the point of entry to all hospitals for all acute patients in Denmark.

The role of Herlev Hospital in the new hospital structure is described in great detail in the 2007 Capital Region Hospital Plan and affirmed by a tentative undertaking to provide financial support given by the Government Expert Panel in 2008.

PHYSICAL PLANNING

SECTION 1 | pages 23-27
The planning and extension of Herlev Hospital take place within a certain planning framework:

- *Municipal Plan and Local Plan.* The 2009-2021 Municipal Plan contains a number of framework provisions concerning the competition site, and zones the site for public purposes as Area D12 Hospital.
- *The Ring City.* The proposed high-class public transport link (light railway) along Ring Road 3 from Lundtofte in the north to Ishøj/Brøndby Strand/Avedøre Holme in the south represents major development potential for the urban areas located along Ring Road 3. In Herlev, it is the area comprising Herlev Hospital, the Bycenteret shopping area and the Marielundvej district that will be affected.
- *The Cultural Axis.* Intended to provide new experiences in the Bymidten district, the Culture Axis is laid out as a flow of spaces starting at the entrance square at Herlev Hospital and running via Turkisvej along the blue path with the Community Centre past Paletten – which houses a cinema, a theatre and a school of music and visual art – to the Bymidten district – where the local library, the Hjulmandens Hus and the Herlev Torv square are located – then to Bangs Torv and Hørkær, where youth culture unfolds in Radiatorfabrikken.
- *Sustainability.* Modern-day hospital operations consume a great deal of resources, so the construction and operation of hospitals must be clearly focused on the use of sustainable solutions and on the overall handling of waste, wastewater and rainwater, as well as the use of drinking water.

HERLEV HOSPITAL NOW

SECTION 1 | pages 28-41
The competition site covers an area of about 260,000 m^2. To the north and east, the competition site is delimited by single-family and terraced houses located along Runddyssen. These residential facilities are inside the hospital compound and part of Herlev Hospital, but outside the competition site. To the southeast, the competition site is delimited by the Herlev ring road; to the south by Hjortespringvej; and to the west by single-family houses along Turkisvej and the 'blue path' along Hospital Park, which is a public park. The natural landscape slopes relatively evenly from north to south, but the hospital site was landscaped into terraces when the hospital was built.

Herlev Hospital was built after a design competition won by architects Gert Bornebusch, Max Brüel and Jørgen Selchau. The landscaping was designed by Svend Hansen, and the artistic decoration was provided by painters Poul Gernes and Else Fischer Hansen.

Herlev Hospital has been extended twice. In 1984, the service building was extended by about 7,000 m^2; the most recent addition, the new 7,200 m^2 radiation therapy building, was inaugurated in 2007. The design of both extensions showed a great deal of respect for the original architecture of the hospital. A number of temporary pavilions have also been set up in recent years; the plan is to remove them once the currently planned extension has been completed.

THE ASSIGNMENT

SECTION 2 | pages 44-95
The competition concerns the following three main elements:

- MASTERPLAN
  Proposal for masterplan (long-term and short-term development).
- NEW BUILDINGS
  Proposal for the specific design for the first stage of the project: General Acute Admissions (FAM) and Woman/Child Building (KBB).
- CONSULTANCY SERVICES
  Tender for consultancy services in connection with the realisation of Stage One.

VISIONS

The extension of Herlev Hospital must reflect the following visions:

- The new Herlev Hospital must be full of light, friendly, welcoming and organised in a way that creates ease of overview. Future patients at Herlev Hospital should meet an environment that is pleasant, service-oriented and tranquil, one that in every way promotes a positive perception of the time spent at the hospital.
- The masterplan and the new buildings must be designed in such a way that new and existing buildings form a harmonious, well-arranged and operationally rational whole. The aggregate building stock must form a new flexible and functional framework that enhances the perceived quality of the hospital's services and furthers the quality of professional services provided.
- More specifically, the new buildings must accommodate functions as diverse as general acute admissions, obstetrics and the treatment of children. The new buildings must cater to the diverse needs and requirements of these functions in a harmonious way, and must therefore proved a calm, contemporary and family-oriented setting for families with young children, just as it must provide optimal conditions for the admission of acute patients.

MASTERPLAN

SECTION 2 | pages 45-51

One aim of the competition is to create an overview and ensure rational planning of the future extension of Herlev Hospital. In addition to determining the location of the proposed new buildings and their interaction with the current hospital facilities, the plan must illustrate possible future extension options that would ensure a good interplay between new and existing building facilities.

The masterplan must illustrate and explain the following for Stage One and later stages:

- Main arrival to the hospital
- Location of new buildings
- Traffic conditions
- The interplay between new and existing buildings
- Landscaping, including spatial hierarchy

NEW BUILDINGS

SECTION 2 | pages 53-93

The proposal for the design of new buildings must include a concept for the FAM and KBB units as well as a proposal for parking spaces inside building structures and an emergency power system. The new facilities may be contained in one or more buildings that must be interconnected and connected with the currently existing hospital facilities. Car parking facilities inside building structures may be separate from the other facilities.

Proposals must illustrate and explain

- the overall architectural concept.
- the principles governing internal logistics and location of the individual units.
- the principles governing building flexibility and adaptability.
- the main principles governing structures and installations.
- the concept for the implementation of sustainable measures.
- the concept for integration of art into the building design.

On the basis of the concepts proposed for the FAM and KBB facilities, entrants are requested to provide a more detailed illustration of the following four areas:

- *Main entrance.* The proposal must illustrate how arrival to Herlev Hospital will take place in future and how further access to facilities in current and new buildings will be organised, including access to FAM.

- *Reception in FAM.* The proposal must show the location of the reception area and illustrate how different types of patients will be received and subsequently distributed in waiting areas/examining rooms

- *Delivery area.* The proposal must illustrate the layout and organisation of a delivery area in which a delivery room is combined with lounges and relevant ancillary rooms to form a well-functioning, rational unit.

- *Bed ward in the Gastro Unit.* The proposal must show a proposed layout and organisation of a bed ward in the Gastro Unit and its location relative to the location of the nursing staff workstations.

TENDER FOR CONSULTANCY SERVICES

SECTION 2 | page 95
In addition to preparing a design proposal, entrants in this competition are also asked to submit a fee tender for the consultancy services the winning entrant will provide. The tender must be in the form of (anonymous) completion of a tendering list with due consideration taken for the wishes and requirements set out in the competition documents. A fixed price must be quoted for programming, design, project follow-up and site supervision in the execution phase and for consultancy services in connection with the commissioning of the facilities and at the one-year inspection.

The consultancy services must include all architectural and engineering services, design and planning services, landscape architecture services, advice concerning furniture and equipment, and advice concerning the integration of art in the building design. The consultancy services will comprise the FAM and KBB facilities, parking facilities inside building structures and landscaping (including roads, paths, etc) in connection with Stage One of the masterplan.

BUDGET

SECTION 3 | pages 99-101
The cost of the entire masterplan is estimated to be DKK 4.2 billion exclusive of VAT. The budget for the parts of the total plan (Stage One) for which funding has tentatively been provided amounts to DKK 2.25 billion exclusive of VAT. This amount covers the total budget, including all contractors' costs, design costs and expenses incurred for equipment and machinery. The budget for the part of the pre-approved project for which lead consultancy services will be provided through the design competition is approximately DKK 1.6 billion exclusive of VAT.

TIME FRAME

SECTION 3 | page 102
The project is scheduled for completion over a period of approximately six years running from the launch of the design competition to the opening of the finished buildings.

ORGANISATION

SECTION 3 | pages 103-105
To manage the completion of the project, a project organisation has been defined, setting out a clear division of responsibilities between the client (including user groups and others) and the external partners, the client's adviser and the lead consultant.

SUBMISSION OF ENTRIES

SECTION 4 | pages 108-115

Entries/tenders must be handed in to a post office, express delivery service or a similar service on or before Friday, 29 October 2010.

ASSESSMENT OF ENTRIES

SECTION 4 | pages 108-115
Provided they are handed in on time and comply with conditions, the entries will be assessed as follows:

- The functional solution proposed (including operational and functional aspects): 35% assessment weighting.

- The architectural solution proposed: 25% assessment weighting.
- The engineering solution proposed (including sustainability): 15% assessment weighting.
- The realisability of the proposed scheme (including costs, method and organisation): 10% assessment weighting.
- The tendered fee: 10% assessment weighting.

The ‘economically most advantageous tender’ will be selected on the basis of all four points listed above.

SUCCESS CRITERIA

The overall purpose of the design competition is to enhance the qualities of Herlev Hospital as a patient-friendly, rational and future-proof hospital. The success criteria can be specified as follows:

- The scheme proposed must ensure optimal flows for patients, relatives, staff and goods both in the masterplan context (vehicular access and parking) and in relation to the new buildings (arrival and treatment).
- The new building facilities must be integrated with those of the rest of the hospital and the principles chosen to govern structural design and installations must ensure robustness and flexibility in terms of the future use and organisation of spaces and functions.
- The proposed scheme must allow the option of implementing new technology that helps to ensure patient safety and the optimisation of treatment, logistics and operations.
- The masterplan and the concept for new buildings must respect the current architecture while at the same time having an identity of its own.
- The design of buildings, the integration of art and the design of outdoor spaces must be such that a coherent experience of ‘focus on people’ is created for patients, relatives and staff.
- Construction, operation and maintenance costs must be optimised to ensure the viability and sustainability of the proposed scheme.

BACKGROUND

HOSPITAL PLANNING

CAPITAL REGION

2007 Hospital Plan
In 2007, the Capital Region prepared a hospital plan whose aim was to re-engineer the healthcare services in the Region. The plan is the first step toward a single, coherent healthcare system in the Region. It unites a number of treatment and therapy facilities in fewer hospitals, the purpose being to strengthen the professional quality of treatment and provide a better basis for research and development.

With the adoption of the Hospital Plan, the framework for the extension to Herlev Hospital was also determined. In order to ensure quality, professional environments and effective operation, several functions will be united at Herlev Hospital, which will come to play an important role as the area hospital in the 'Midt' planning and catchment area, which has a population of 425,000 people. The woman/child specialities and the delivery and maternity services for the catchment area will also be centralised at Herlev Hospital, and the hospital will also continue as a high-profile specialist cancer hospital.

According to the Hospital Plan it is necessary to initiate a large-scale construction project at Herlev Hospital to enable it to provide the new services. A new detached woman/child building; a general acute admissions unit, an office building and a patient hotel must be established; the service building (Block 7) must be extended; and major reorganisation must be implemented between the high-rise ward building and the treatment building.

Realisation of the Hospital Plan requires substantial investment in the conversion and adaptation of existing hospital buildings. This is particularly true of Copenhagen University Hospital (*Rigshospitalet*) and the four area hospitals, where major adaptations and extensions are necessary.

Immediately after the adoption of the Hospital Plan, further planning was initiated to specify the vision and the planning basis for the future extension of the hospital. This planning included considerations of how the patient base should be translated into a future need for space.

Four planning areas
The Hospital Plan divides the hospital system of the Capital Region into four new planning areas: *Nord*, *Midt*, *Byen* and *Syd* (North, Centre, City and South). The four planning areas set out in the Hospital Plan and the psychiatry plan are the basis of all future hospital treatment activities. In all the planning areas and within each individual area, local residents must be guaranteed a uniformly high quality and service level.

Area hospitals and local hospitals
Each of the four planning areas has one area hospital in charge of acute surgical and medical treatment. Herlev Hospital is the area hospital of the 'Midt' planning and catchment area.

Closeness is important to medical patients. Each planning area therefore has one or two local hospitals which, together with the area hospital, which also provides local hospital services, will ensure the desired geographical closeness in medical treatment as well as close collaboration with the relevant local authorities.

Caption:
Planning and catchment areas
Herlev Hospital is located at the southern end of the 'Midt' catchment area and thus mainly provides services to patients coming from the north. Illustration: Capital Region.

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Distribution of specialities on hospitals
The Hospital Plan brings together several specialities in fewer units.

The area hospitals will have the specialities that are necessary to ensure admission and treatment at main function level of local residents with acute diseases and disorders that require treatment: acute surgery, acute orthopaedic surgery, acute internal medicine (cardiology, pulmonary medicine, gastroenterology, endocrinology, geriatrics, infectious diseases, rheumatology) and anaesthesiology, including intensive care, diagnostic radiology, clinical biochemistry, pathology, clinical physiology and nuclear medicine. In addition, the area hospitals with delivery and maternity units must have gynaecology and obstetrics as well as paediatrics with a neonatology function.

Hospital plan framework
The plan is based on the following fundamental focus points:

- *High quality*. The hospital plan is intended to promote high quality in the examination, treatment, care and rehabilitation of patients.
- *Closeness*. Health policy declarations of intent and reports issued by the Hospital Structure Committee state that quality takes precedence over geographical proximity.
- *User needs; demographic trends and differences in hospital spending*. Hospital spending is influenced by demographic changes in the region and by user priorities. These factors should be taken into account in the plan for the hospital.
- *Coherent patient pathways and collaboration with local authorities and primary sector doctors*. The hospital plan should be conducive to coherent treatment pathways, which means that it must to the greatest possible extent be possible to finish the treatment of patients at the hospital of primary admission.
- *Research and development*. Both general and specialist functions must be organised in a way that ensures the provision of good research environments so that research can become part of everyday clinical work and research results can be applied in clinical practice.
- *Basic and continuing education and training*. Hospitals are institutions of education for all groups of healthcare staff working both inside and outside hospitals, so planning must take basic and continuing education and training activities into account.

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- *Good working environment, recruitment and retention*. The hospital plan must be conducive to promoting and maintaining a good working environment and good management functions. The bringing together of functions must help to make individual functions more robust and less sensitive to staff shortages.
- *Operational optimisation*. In order to address financial pressure, the hospital plan must help to optimise operations and ensure effective use of financial resources.
- *Physical framework*. Capital investments must ensure that the new functions will be accommodated within a modern, contemporary physical framework that lives up to the legitimate expectations of patients, relatives and staff.

DANISH GOVERNMENT AND DANISH REGIONS

In the financial agreement made between the Danish government and Danish Regions in 2008, the parties agreed that structural changes of the hospital system and consequently investments in adaptations of the physical framework were needed. The government set aside an amount of DKK 25bn for investment in a new, improved hospital structure and, combined with the regional co-funding of 40% of building projects, the total investment will be in the region of DKK 40bn.

At the same time, an expert panel was established to assess the individual projects proposed by the regions. A sum of DKK 15bn has been set aside for the first phase, while an additional DKK 10bn has been allocated for the subsequent

phase. The Capital Region submitted to the expert panel an overall plan for the extension of the physical framework for patients in the region, a plan based on proposals from the different hospitals in the region.

In January 2009, the expert panel made a tentative undertaking to fund an extension to Herlev Hospital, the total budgetary framework being DKK 2.25bn (2009 price and wage index) including regional funding. A final commitment will be made once the building programme has been prepared and approved.

PLANS FOR HERLEV HOSPITAL

Plan for the new buildings

On the basis of the Hospital Plan, Herlev Hospital has continued the planning process and in this connection has held several meetings with users resulting in the following distribution of specialities in the new buildings included in this design competition:

- Paediatrics, gynaecology and obstetrics must be located in new building facilities, as has always been the plan, and so should a new general admissions unit.
- A new, improved shared acute admissions unit must be located in new building facilities. It is believed that the new acute admissions unit will come to play an important role in the examination and treatment of many acute medical and surgical patients at the hospital. It is a prerequisite that there are fast response times for blood samples, microbiology, etc around the clock. The area for observation wards must have room for up to 130 beds. As a minimum, the recommendations of the Danish National Board of Health on the staffing of acute admissions units with specialist doctors must be followed.
- The Gastro Unit, which performs a considerable share of the acute surgical operations, must have both beds and operating theatres in the new building facilities so that all acute surgery activities, ie gastro surgery, gynaecological surgery and C-sections, will be located together in the new buildings. The department of orthopaedic surgery may also perform acute surgery in the new building facilities but should otherwise have its main surgery activities in the current surgery unit in the treatment building.
- It has already been decided that the new combined outpatient clinic and endoscopy unit is to be established on Level 4 of the current Block 5. The intensive care unit must be close to the acute admissions unit, the acute surgery unit and the Gastro Unit, and must be located within an up-to-date physical framework in the new building facilities.

Plans for existing buildings

The concept of setting up multidisciplinary teams which focus on patient groups – for example, for women with breast cancer, a team of specialists in breast surgery, plastic surgery and pathology working together – must continue within the current framework. For this reason, Herlev Hospital will also prepare an overall detailed plan for the existing building stock.

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The plan is to use the nursing school (Block 12) for administrative, educational and other, similar purposes.

The final use of the Service Building (Block 7) has not yet been determined, but the plans of extending the microbiology department and the sterilisation unit, establishing a shared research area and shared workshops, and setting up shared logistics, etc still apply.

Renovation of the existing hospital
In addition to new buildings, an extensive renovation of the bed ward building, treatment building and other existing buildings is necessary. Such renovation is not part of this competition but mentioned here to indicate the close future connection between the renovation project and the establishment of the new building facilities.

Two to four levels of the ward building are expected to be renovated together at a time. In the early part of the renovation period, some replacement areas will be required; it will be necessary to use the newly established one- and two-bed rooms as two- and three-bed rooms towards the end of the renovation period or, alternatively, to use a replacement area elsewhere on site.

Choice of extension model
One crucial aspect in the project has been the choice of an operationally rational model that ensures a logical division of labour in the future building stock. It is a government requirement that, in parallel with the physical extension of the hospitals, organisational development and a revised organisation of work are considered.

Another important aspect to ensure that the model is flexible. No one can predict what will be considered optimal hospital operation ten to twenty years from now, which is why the building facilities must be flexible and adaptable. Once extended, Herlev Hospital will comprise the elements mentioned above and provide the following anticipated benefits:

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- The model gathers departments performing acute surgery in new building facilities that will feature a number of qualitative and operational benefits both in general and in relation to collaboration with the acute admissions unit, and also in terms of staff coverage. The model offers the option of establishing an acute surgery unit in the new building facilities, covering the specialities of gastro surgery, gynaecology, and facilities for orthopaedic surgery and a surgery unit for elective surgical procedures in existing buildings, covering the specialities of urology, plastic surgery and breast surgery.

- The model allows a substantial optimisation of operations in several areas. It is expected that the general acute admissions unit will lead to workflow optimisation due to faster assessment of acute patients and faster initiation of their treatment. A proactive use of observation beds in the shared acute admissions unit for patients who will most likely be admitted for short stays only will also help generate an optimisation of operations.

- The model is also expected to optimise surgery activities, as the surgery unit will be divided into a unit for acute surgery and a unit for elective surgery. A characteristic feature of the elective surgery unit will be a high degree of predictability with respect to patient inflow, which will allow an efficient and effective utilisation of operating theatres and resources.

- Furthermore, an optimisation of on-duty staff coverage will most likely also be possible. In future, the activities will be concentrated in the new building facilities: general acute admissions, acute surgery, delivery, C-sections and intensive care, in addition to which there will be stationary patients in the ward building. Once the building project has been partially or fully completed, it is expected that it will be possible to close down the treatment building outside normal hospital hours, as the functions contained in the building – ie outpatient clinics, elective surgery units and multidisciplinary functions – will primarily be active during the day.

Caption:
Existing and planned buildings

Existing buildings

Temporary buildings

Planned extensions

Possible extensions

MUNICIPAL PLANNING

Framework conditions
The 2009-2021 Municipal Plan sets out a number of framework conditions for the competition site, zoning it for public purposes: Area D12 Hospital, ie a hospital with associated facilities, a nursing school, green areas, a peak load district heating plant, an upper secondary school, day-care facilities, parking and planted areas. The plan also lays down the following requirements:

- Rain- and wastewater must be separated into four fractions.
- New buildings must constitute an attractive flow of spaces from the auditorium building to the 'blue path' along Hjortespringvej.

The maximum plot ratio is 200.

The municipal plan does not define any maximum heights for Herlev Hospital buildings. In connection with preparing the competition brief, Herlev Town Council discussed surface areas and heights of possible future buildings.

There is a great deal of political focus on ensuring that future buildings will intrude as little as possible on adjacent residential areas, in particular the housing units at Turkisvej. For this reason, Herlev Municipality has decided that new buildings may not exceed the heights shown in the illustration. The location and size of the possible 80-metre or 24-storey high-rise building is shown schematically.

As part of their masterplan proposal, entrants are requested to indicate which heights would be appropriate in relation to the existing hospital complex, while at the same time taking shadow effects on neighbouring sites into account.

Ring City
The Municipal Plan describes the shared intentions of the municipalities located along Ring Road 3 as follows. The proposed high-class public transport link (light railway) along Ring Road 3 from Lundtofte in the north to Ishøj/Brøndby Strand/Avedøre Holme in the south represents major development potential for the urban areas along this road. In Herlev, Herlev Hospital, Bycenteret and the Marielundvej district will be affected.

Caption:
Building zones and heights
Max 24 storeys/80 metres
(principle for location of a possible high-rise building)
Max 12 storeys/40 metres
Max 3 storeys/10 metres
Max 1.5 storeys/5 metres

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Caption:
The Cultural Axis
A series of cultural facilities and services at the centre of Herlev intended to create identity and ensure cohesion.
The axis has its northern end at Herlev Hospital.
Illustration: Herlev Municipality.

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The Cultural Axis: new experiences in the town centre
The Municipal Plan describes the Cultural Axis as follows: the Cultural Axis is a flow of spaces that begins at the arrival square in front of Herlev Hospital and runs via Turkisvej along the blue path and the Community Centre, past Paletten and its cinema, theatre and school of music and visual arts, to Bymidten with its local library, Hjulmandens Hus and the Herlev Plads square, and from there on to Bangs Torv and Hørkær, where youth culture unfolds in the Radiatorfabrikken centre.

The Cultural Axis should be people's preferred route through the town, marking a vibrant cultural centre and helping to create identity and cohesion. The Cultural Axis should be developed continually, with a focus on cultural events and services. Over time, it must be combined with the reuse of rainwater in a water feature; areas for rest, relaxation and gathering; happenings; pictorial art and sculptures; plants; new surfacing; and a special lighting design.

More detailed information about the Municipal Plan is available at www.herlev.dk/kommuneplanen.

Local plan
The competition site is now covered by Zoning Regulations XV. According to Herlev Town Council, a new local plan for the hospital site will be prepared on the basis of the winning entry in order to make the planned extension of Herlev Hospital possible.

Environmental review and EIA
An environmental review and an environmental impact assessment (EIA) will be performed in connection with the preparation of the local plan. The EIA will look at matters such as traffic flows at the hospital site and to/from Herlev Hospital both in the construction and the subsequent operations phase, the visual effect of the new buildings, and the impact on neighbours during the construction (noise, vibrations and dust).

Preparation of the EIA is not part of the competition assignment.

Regulatory requirements
In connection with the local plan and the processing of the building permit application, the local authorities in Herlev will make the following requirements:

- The buildings must comply with the requirements applying to Energy Class 1, which is defined as follows by the local authority: The Energy Class 1 requirement regarding hospital buildings applies only to the actual buildings and the operation of them; energy-consuming hospital equipment and special facilities are not included in the energy calculations on which the classification is based.
- The natural circulation of water must be integrated and, insofar as possible, handled locally so that it contributes to the formation of groundwater or is used for recreational purposes.

- Wastewater must be separated into up to four fractions:
  A. Wastewater comparable to household wastewater.
  B. Surface water, from which oil must be removed.
  C. Uncontaminated rainwater, which could possibly be allowed to percolate into the ground.
  D. Hospital wastewater, which needs special treatment.
- No environmentally harmful substances may be discharged. (See the report on wastewater and liquid waste issued by Lynettefællesskabet I/S in November 2009, available at www.spildevandsinfo.dk. [Herlev Municipality is a member of Lynettefællesskabet.])
- Waste treatment must comply with the 'Industrial Waste Regulations' and 'Regulations for the Storage of Hazardous Substances and Hazardous Waste at Enterprises' issued by Herlev Municipality.
- Noise limits (35 db(A) evening and night) must be observed in relation to neighbouring sites.
- Moreover, all applicable legislation must be followed concerning:
- Structures, fire protection, ventilation, noise regulation and control, etc.
- Accessibility for everyone. As a minimum, the buildings must meet the A-level for accessibility as set out in the applicable building regulations. Compliance with the recommendations of the Danish Accessibility Association is also advised. See www.godadgang.dk.

The following excerpt is taken from an article by Philip Jensen of the Department of Town, Housing and Property at the Danish Building Research Institute at Aalborg University:

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"With the stricter accessibility requirements set out in BR08 and the introduction of the three quality levels A, B and C, architects, construction designers and others now have an excellent tool to help them ensure accessibility in buildings. However, it is important that accessibility is taken into account as early as the design phase, as all experience shows that the best accessibility results are achieved if the special needs of people with disabilities are considered from the start. The C-level indicates a quality that meets the requirements of the building regulations. The B-level represents a higher level of quality that is equivalent to the requirements set out in Danish accessibility standard DS 3028 entitled 'Accessibility for Everyone'. The A-level represents an even higher level of quality that may be relevant in buildings used for people needing a high level of care."

SUSTAINABILITY

Modern-day operation of hospitals is highly resource-consuming. For this reason, it is important in connection with construction and operation of the building facilities to focus on the incorporation of sustainable solutions and on the overall handling of waste, wastewater and rainwater and the consumption of drinking water.

The largest amount of energy is used for ventilation, heating, cooling and lighting. Complex medico-technological equipment is another factor causing a dramatic increase in total energy consumption. Furthermore, a wide range of chemicals are used in buildings and products, as well as in the operation of the hospital.

In addition to the environmental aspects, entrants are requested to consider social and financial sustainability.

Caption:
Agenda 21
Model for the selection of Agenda 21 parameters for the Capital Region.
Illustration: Capital Region.

Establishment of environmental management, energy management and reporting structures
Establishment of multidisciplinary network of environment managers and staff
Competence development and building up knowledge
Communication and dissemination
Environmental review of all relevant decisions
Environmentally sound tendering and purchasing
Sustainable design
Sustainable mobility and transport

Energy
Air and climate
Water
Wastewater
Chemicals
Waste

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The Region's Agenda 21 strategy
The Capital Region has prepared an Agenda 21 strategy focusing on environmental dimension and on the environmental indicators that can be immediately registered and measured.

The environmental dimension comprises elements of the economic and social dimensions, eg sustainable design, the health effects of air emissions, health and safety in relation to the handling of chemicals, including hazardous waste and medical waste.

The objective of the Agenda 21 strategy is to promote changed attitudes and behaviour in staff working for the Region and later on also in patients, citizens and others. Behavioural change will be stimulated and governed by a number of targeted efforts and initiatives that will run across the range of selected parameters shown in the diagram on page 28.

The Capital Region has also prepared a set of guidelines for sustainable building design: As appears from the diagram below, the Capital Region has selected a number of focus areas. Targets aimed at reducing negative environmental impact in the Capital Region area have been defined for each focus area.

The overall objective is to identify and implement energy savings so as to reduce CO_2 and other emissions, reduce the consumption of water and chemicals, and avoid the discharge of wastewater and generation of waste containing substances that are harmful to the environment.

These objectives are to be achieved by means of both conventional methods and new innovative, behaviour-changing ways to run a business.

The full wording of the Region's Agenda 21 strategy is contained in an annex to this brief.

Regional guidelines for sustainable building design

- Buildings and other structures must have a minimum negative impact on people and the natural environment.
- The implementation of sustainable solutions must further the development and use of cleaner technologies and less polluting products.
- There must be no compromise on operational functionality, safety, security and the like.
- The economic sustainability of the design must be taken into account.
- Energy-conscious, sustainable design must be used.

In 2010, the Region will define methods and tools to be used in all building projects to ensure that the right sustainable choices are made in the various design and building phases. This material is part of the annexes to this brief.

The tools are to be used to determine the environmental impact of the project, define targets for the reduction of environmental impact and identify means for the achievement of those targets.

Caption
Agenda 21

Model for the selection of Agenda 21 parameters for the Capital Region.

Illustration: Capital Region.

Illustration:

Energy
Water
Materials & chemicals
Floor area use
Biodiversity

+

Air and climate
Wastewater
Waste
Health and safety
Risks
Nuisances

Building operation
New buildings/maintenance
Procurement and new equipment
Transport

COMPETITION SITE

The competition site covers an area of about 260,000 m^2 and is delimited as shown in the aerial photo below: to the north and south by single-family houses and terraced houses along Runddyssen, located outside the competition site but within the perimeter of the hospital site, thus forming part of Herlev Hospital; to the southeast by Herlev Ringvej; to the south by single-family houses along Turkisvej and the 'blue path' along the Hospital park, which is a public park.

The natural terrain slopes fairly evenly from north to south, but the hospital site was laid out as terraces when the hospital was built.

At the southern end of the competition site, there is a rainwater basin which must be preserved and possibly extended to manage surface water at the site.

Detailed information about the competition site is given in the annexes to the brief.

GENERAL LAYOUT AND ORGANISATION

Herlev Hospital

Herlev Hospital was built after a design competition won by architects Gert Bornebusch, Max Brüel and Jørgen Selchau. The landscaping was planned by Svend Hansen; Poul Gernes and Else Fischer Hansen were behind the artistic decoration of the hospital. Herlev Hospital is a coherent and harmonious building complex free of numerous extensions representing different architectural styles.

Herlev Hospital has been extended twice: a 7,000 m^2 extension was added to the service building in 1984, and the new 7,200 m^2 radiation therapy building was inaugurated in 2007. Both extensions were designed with great respect shown to the original architecture of the hospital. In recent years, a number of temporary pavilions have been installed. They will be removed once the planned extension of the hospital has been completed.

[page 29]

Caption:
Competition site
Herlev Hospital and its immediate surroundings.

[page 31]

The most notable features of the building complex are a dominant high-rise building containing the hospital's wards (Block 1) and a relatively low treatment building (Block 5). This distinctive distribution of wards and patient treatment facilities in separate buildings was one of the hallmarks of the structural perception of hospitals at the time it was designed.

The main entrance and the large hospital lobby (Block 2) are located between the two patient-related buildings, with a direct connection to the canteen, the cafeteria and the large conference rooms. Two distinctive and architecturally expressive auditoriums add character to the complex. A service building (Block 7) and a chapel (Block 9) are separate buildings located to the north of the central buildings.

The different transport systems, the many ancillary rooms needed to ensure minimum walking distances within individual departments, the long, wide corridors and the lack of focus on surface area utilisation at the time when the hospital was built are the reasons why the gross floor area to net floor area ratio at Herlev Hospital is very high compared with contemporary standards.

The buildings are called Blocks 1 to 12. Some numbers are missing because the numbers in questions were intended for buildings included in a previous extension plan that was never realised.

Floor areas
According to the Danish Building and Housing Register (BBR) as at March 2010, the total current floor area excluding basement areas can be broken down as follows:

Block 01	61,624 m^2
Block 02	6,210 m^2
Block 05 including cyclotron and radiation therapy	112,429 m^2
Block 07	13,188 m^2
Block 09	533 m^2
Block 12	6,746 m^2
Residential facilities	2,454 m^2
Total gross floor area	203,187 m^2

Pavilions are temporary buildings and thus not included in the gross floor area. Calculations put the site area including residential areas at 267,349 m^2.

Materials
Only three materials were used for exterior surfaces when the hospital was built: white concrete, brown anodised aluminium and glass. All interior surfaces are painted, and all flooring is coloured linoleum, with the exception of the ground floor on which the main circulation route is marked by white marble. The inside of the light-coloured building is thus a multicoloured universe.

Art
The artist Poul Gernes is behind the unique interior artistic decoration of Herlev Hospital. Art is integrated on all levels, on all floors, in all rooms and in all corridors and hallways. Gernes devised a new way to combine colour, form and function. Another purpose of the decoration was to keep patients entertained and to enhance staff's well-being.

The decoration in the entrance hall is made up of 56 individual paintings, the motifs being patterns and symbols. While the decoration of the entrance hall was intended to be deliberately casual and send mixed signals to a certain degree, the decoration of the high-rise ward building was meant to radiate order and a systematic approach.

In the wards, Poul Gernes used colours as a colouristic compass. Colours were selected on the basis of the corners of the world: cool colours (blue and green) dominate rooms facing north; warm colours (orange and red) are used in rooms facing south; yellow colours dominate rooms facing east; and soft peach and apricot colours are used in patient rooms facing west. At least one wall in each patient room is white: the wall behind the patient. This provides a neutral background against which doctors or nurses can assess the patient's general condition.

The colour coding is not only used for the walls. The floors, fittings and some of the fixed furniture are also painted so that, in addition to being entertaining, the colour shows in which of the corners of the world the room is located. Even the curtains are designed by Poul Gernes, and they too reflect the corners of the world: cool colours to the north, and warm colours to the south.

The treatment building is mainly white to indicate the difference between outpatient clinics and patient rooms. However, the few colours used in the treatment building have a function: they serve as signage.

Caption, page 32

Art

Artist Poul Gernes is the creator of the hospital's unique interior decoration. Art is integrated on all levels, on all floors, and in all rooms and corridors.

[page 33]

The corridors in the treatment building take up an enormous area. To make it possible for people to distinguish between the various outpatient clinics, each of them has its own specially coloured frieze. Almost all the colours chosen are associated with certain values. For example, spring green is used in the delivery area, ox blood red in the blood bank, etc.

Gardens

The hospital site is laid out as a terraced park with Exeter elms in the periphery. Car parks for visitors to the hospital are located close to Ring Road 3. A system of paths connects the car parks with the nursing school and the main entrance to the hospital. The area in front of the ward tower and the entrance hall building are paved with concrete tiles and furnished with benches, hedges and trees.

Ward building: Block 01

The ward building, which is a 25-storey high-rise building, is located to the south of the treatment building. It comprises three interconnected towers: a ward tower, a medical tower and a lift tower. The height of the tower complex is 90 metres. The design of the plans of the towers was dictated by a demand for concentration and short walking distances.

Each storey has room for 48 beds, distributed in six groups with four patient rooms and associated bathroom and toilet cabins each. Between the groups of patient rooms there are seating areas for walking patients. The core of the ward building contains an area for staff on duty, a depot, examination rooms, conference rooms, etc, as well as an area with a fully automated transport system for supplies and two lifts for dirty goods.

The 26-storey medical tower contains offices for doctors, secretaries, head nurses and others. The medical tower is connected with the ward tower by connecting corridors, which are also connected to the third tower, the lift tower. The lift tower has sixteen fast lifts for patients and beds and is the main vertical traffic artery in the building complex. With its height of 120 metres, it is also the highest building at the hospitals. The top levels are used for plant rooms.

Because of its height, the ward building has several load-bearing concrete walls, which means that options are limited in changing the sizes of patient rooms and other rooms. The treatment building, however, is based on a column and beam structure that offers greater flexibility in terms of the layout and organisation of spaces.

Entrance hall building: Block 02
The entrance hall building, which is the hospital's main arrival area, has two storeys. In addition to a lobby, it includes a large conference room, two auditoriums with room for about 130 and 300 people respectively, a kiosk, and a restaurant and canteen with seating for approximately 500 people (about 210 in the canteen and 175 in the restaurant). The shared area can accommodate close to one hundred people and can be combined with the restaurant or the canteen as and when needed.

Through a passage at the lift tower, the lobby area is connected with the treatment building, in which a longitudinal distribution corridor provides access to the various outpatient clinics via lifts. The entire arrival and distribution area is marked by the same marble flooring. From the foyer, there is also access to the hospital's administrative facilities, which take up the two lowest storeys of the ward building.

Treatment building: Block 05
To the north of the ward building is the treatment building, which has four storeys, two of them partly below ground level. Access to the building is either through the foyer area (Block 02) on Level 01 or through the secondary entrances to the north that lead directly to Level 03.

The treatment building has three-metre-wide corridors that run north-south and east-west in a rhythmic pattern that shapes the building's characteristic grid of 15x15 metre squares. A treatment unit takes up one or more of these squares, and it is possible to go to a square without passing – and thus disturbing – another unit. This principle of squares provides optimum flexibility, thus making it possible to adapt the layout and organisation of the facilities to developments in medical and technological treatment of patients.

[page 34]

Captions

Traffic: Current conditions
Patients
Visitors/relatives
Staff
Ambulance
Services

Parking: Current conditions
Parking
Number of parking spaces

The treatment building is used for the treatment of both outpatients and inpatients. The building has distribution corridors as well as treatment corridors. The distribution corridors have separate functions: bed transport, transport of supplies and access route for outpatients. On the treatment level, this differentiation of transport functions is reflected as follows in the plans: corridors next to lift groups serve as access routes for outpatients, while the other corridors are used for the transport of bed-bound patients and supplies. The skylights on the treatment level provide natural light in the treatment units.

Service building: Block 07
To the north of the treatment building there is a service building comprised of two three-storey wings connected by a glass-covered courtyard. This building has two basement levels. It contains the central kitchen, main depot, workshops, bed-making area, central sterilisation unit, etc. The glass-covered courtyard has a fully automated conveyor system which brings goods through tunnels from the service building to the lift tower on Level 2. The service building was extended in 1984.

Chapel: Block 09
A chapel is located to the east of the service building. It is connected with the service building by a tunnel on Level 2 that starts in the eastern facade of the service building.

Nursing school: Block 12
A one-storey building to the south of the treatment building serves as a central school and training facility for student nurses, trainee healthcare assistants and trainee radiographers. The school was put into service in late 1972 and will be transferred to Herlev Hospital in the summer of 2011 at the latest.

TRAFFIC

Vehicular traffic
Currently, there is only vehicular access to the hospital from Herlev Ringvej. This applies to all access by patients, visitors, relatives, staff, ambulances and service delivery vehicles. There is also access to the nursing school from Hjortespringvej/Turkisvej.

The current vehicular entryways to and exits from Herlev Hospital are heavily trafficked for relatively short periods of time in the morning and mid-afternoon, which means queues at the exit. Conditions can be improved by changing the junction at Herlev Ringvej and establishing an additional exit to Hjortespringvej. A temporary exit to Hjortespringvej is currently being set up to reduce the traffic intensity and to assess the effect of such a measure.

Pedestrians and cyclists
Pedestrians and cyclists have access to the hospital along pavements and bicycle paths that follow the trajectories of the roads. In addition there are paths through the green areas that connect car parks with the hospital and the nursing school.

There are a total of 216 covered bicycle parking spaces at the main entrance. On the northern side of the treatment building (Level 03), there are 287 bicycle parking spaces along all entrance areas and 85 spaces in a small lockable cage. There is room for an additional 144 bicycles at the entrance areas along the south side of the treatment building.

Public transport
On Ring Road 3 there is frequent bus service at a bus stop in Herlev Ringvej at the access road to the hospital and a bus stop at the main entrance to the hospital.

Plans have been prepared for a light railway along Ring Road 3 running to Lyngby in the north and Glostrup/Ishøj in the south. Plans are also under consideration to continue a Metro line (City Ring) to Herlev Hospital, which will be its interim end station.

There is a taxi stand and a waiting area for patient transport vehicles (operated by VBT) at the main entrance to the hospital.

Parking
The majority of the existing car parking spaces are located in car parks along Herlev Ringvej and close to the treatment building and the service building. There are a few parking spaces for patients at the main entrance.

In total, there are currently 2,032 parking spaces at the hospital site. The location of the car parks is shown in the illustration on page 34.

[page 36]
There once was a helicopter landing site immediately southwest of the buildings. This area is partly covered by hard surfacing. It is no longer used for its original purpose but as a parking area. It cannot be reused as a helicopter landing area.

INTERNAL LOGISTICS

Automated transport systems
A conveyor system for automated transport of bed, goods, samples, food, waste, etc between the service building and the treatment building is an integrated part of the infrastructure. Currently, only the transport of beds is done on an exclusively automated basis; the rest of the system is not in working order and will not be made functional again. Carts and boxes with goods, samples, linen, food, waste, etc are currently transported on trucks between the service building and the treatment building and taken manually to the individual wards and units.

Sterilisation unit
The sterilisation unit comprises four production lines: sterile production, purchase and order processing, utensil products and an instrument repair facility. The largest production line is the sterilisation, etc of non-disposable medical equipment.

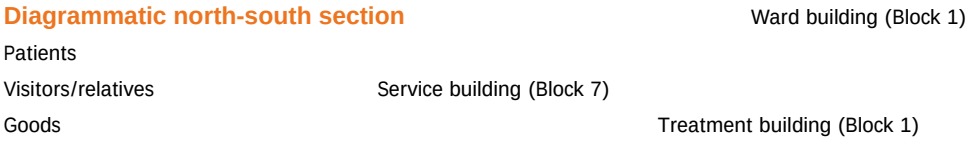
The sterilisation unit is located on Level 05 of the service building. Instruments from the surgical units and from some outpatient clinics and wards are collected seven times a day and taken to the sterilisation unit in closed boxes on open transport carts.

As soon as the instruments have been sterilised and cooled, they are taken back to their respective units.

The sterilisation unit also has a special production line for the cleaning of utensils. Orderlies bring dirty utensils to the sterilisation unit and bring disposable sterile articles and utensils to the various units on the basis of orders. Transport carts and boxes are also cleaned and treated in the sterilisation unit.

Handling of medicine
The units order medicine from the regional hospital pharmacy. Most of the orders delivered are opened and repacked in the goods reception unit and are then taken to the medication rooms in individual units by orderlies. Empty packaging is sent back to the goods reception unit.

Illustration:
Diagrammatic north-south section



Acutely needed medicine can be ordered and collected on the same day. Pharmaconomists in the units are responsible for the handling of pharmacy articles (ordering, shelving, etc).

Bed washing

Beds are washed and made on Level 03 in the service building. Beds are automatically transported to and from units and through the bed washing facility by means of a conveyor system (suspended in a transport rail). Clean and dirty beds are transported in separate tunnels on Levels 02 and 01 respectively under the treatment building (in the ward building on basement levels K1 and K2).

A number of clean beds are prepared as a 'buffer' and 'called' whenever needed. Dirty beds are put on the rail returning from Level 02 in the treatment building or from Level K2 under the ward tower; they end up in a buffer storeroom in the basement of the service building, where they stay until they are called out for washing and preparation.

Linen and laundry

Orderlies are in charge of ordering and delivering bed linen and of filling unit cupboards with clean linen. Dirty linen is returned to the goods reception unit, where the linen supplier collects the laundry.

Food

The central kitchen provides food to all inpatients and outpatients at Herlev Hospital, patients staying at the patient hotel, and patients at Ballerup Psychiatric Centre. It is also in charge of operating the staff canteen and restaurant facilities at Herlev Hospital. The central kitchen is located in the service building (Level 4) and makes about 850 portions of food each day.

Food for the hospital wards is supplied on buffet trolleys containing both hot and cold food. This is done on the basis of orders. The buffet trolleys are transported by truck through the tunnel from the service building to the ward tower where orderlies bring the morning, lunch and evening buffet trolleys round in the units. Unit staff serve the food, and the orderlies return the trolleys to the central kitchen, where they are cleaned. The kitchen also supplies special diet meals and snacks such as fruit. It is able to supply food between 7 am and 10 pm all seven days of the week.

Waste handling

The hospital's supply and transport service is responsible for the handling and disposal of all types of waste.

STRUCTURES

The load-bearing structures in the current building complex at Herlev Hospital are reinforced concrete element structures. Such structures are used in the ward and treatment buildings as well as the service building.

Below the current building complex, between the service building, the treatment building and the ward tower, there is a functioning tunnel connection in Line G on Levels 01 and 02, with several separate corridors.

An extra tunnel in Line P starting on Level 02 of the treatment building was established when the hospital was built, the intention being to connect it to the extension to the service building. The tunnel has two separate corridors and, just as the functioning tunnel, it is connected with the lower basement level, Level K2. The tunnel system is thus prepared for extensions, and it would be possible to connect future transport routes between the Woman/Child Building and the General Acute Admissions Unit to these existing tunnels.

INSTALLATIONS

In all building sections, piping is installed inside shafts, engineering ducts, crawlspaces or installation floors. As a result, there is easy access to the installations for maintenance purposes, just as it is possible to carry out modifications in one unit with a minimum of nuisance to adjacent units.

The various technical installations at Herlev Hospital were designed at a time when energy costs were low, and the current installations still reflect that lack of focus on energy optimisation.

There is a monitoring station in the service building from which all technical systems are monitored and also controlled to a certain extent.

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Water installations

The hospital's hot water supply is divided up into three systems with hot-water tanks connected to the district heating supply on the primary side.

The service building (Block 7) and the nursing school (Block 12) have one system each. The third system covers all installations in the treatment building (Block 5), the ward tower (Block 1), lobby areas, auditoria, etc (Block 2) and is divided into four pressure zones. The first pressure zone covers all areas up to and including the fourth floor; the three other pressure zones cover the levels in the ward tower from the fifth to the twenty-sixth floor.

Sprinklers/fire protection

The hospital is basically wholly covered by sprinklers. However, some local areas such as operating theatres, IT machine rooms and the area containing the control system for the lifts in the high-rise building do not have any sprinklers for patient safety reasons. These areas are covered by automatic fire alarm systems (ABA systems).

The sprinkler central is located on Level 29 (the 'high system', with a tank containing 5,000 litres of water fed to it from pumps in the basement under the ward tower), and in basement K1 under Block 01 (the 'low system', with three tanks containing 7,500 litres each): most of it is nitrogen generating a 'primary pressure' which ensures that the water can come out of the sprinkler head.

All buildings are protected by smoke detectors that will automatically close open panic doors to avoid the spreading of smoke.

Light installations

The light installations for general lighting are mainly strip lights built into the ceilings, while special lighting and work lighting are based on incandescent light.

Drainage installations

The current drainage pipes are a mix of cast iron, plastic and stainless steel pipes. A relatively large proportion of them are in a poor state of repair, especially the plastic and cast iron pipes. Wastewater and rainwater are kept separate today.

Heating and ventilation

All building sections are fully air-conditioned with two-channel air conditioners. The injection of air takes place either at building facades or from anemostats in the ceilings, while air extraction takes place through light fittings. Thermostats control the system in each room individually.

This type of heating is highly energy-consuming, and the resulting indoor climate is not optimal compared with less energy-consuming radiator heating. It will be necessary to change the heating system in connection with a renovation of the hospital installations, which have basically remained unchanged since the hospital was built. Whenever large areas of the hospital have been renovated, the first steps were taken towards changing the heating system to conventional radiator heating operated at lower temperatures and with a low rate of air renewal that covers the need for comfort ventilation and meets hygienic minimum standards.

Cooling

The hospital has a central cooling plant for the cooling of ventilation air at outdoor temperatures in excess of 150°. In addition, a number of local cooling systems are used to cool IT machine rooms, MR scanners and the cyclotron.

UTILITIY SERVICES

The current main utility connections generally cover current needs and requirements.

At the site set aside for new buildings, there are a number of utility ducts that have to be taken into consideration in the design of new buildings. The location of these ducts is shown in the underground services plan, which is part of the annexes to this brief.

Water supply

The hospital is supplied with service water through three service pipes connected to the public water supply system.

Drainage / sewers

A separation system with separate ducts for wastewater and rainwater has been established at the hospital site.

There is an internal system of pipes for wastewater containing formalin, which is taken to a separate storage tank. A rainwater collection basin is located at the southern end of the hospital site. Its exact location is shown in the annexes.

At the hospital site boundary at Hjortespringvej (south), the separation system is joined together in a single shared duct connected to the mains in Hjortespringvej. Although it is assumed that the sewers around the hospital site will be able to take up an increased volume of wastewater, the capacity of the sewage system must be verified in future planning. Herlev Municipality has confirmed that the public sewer system can handle an increased volume of wastewater, but will not grant permission for any increased discharge of rainwater. The limitation is caused by the existing rainwater duct, with its diameter of 250 mm from the collection basin to the public duct system.

Heating

The Vestforbrænding incineration plant in Glostrup supplies district heating to Herlev Hospital. There is no other heating supply to the hospital.

The hospital's current heating system was originally designed and dimensioned for the supply of 155°C high-pressure water. Vestforbrænding later lowered the temperature to 135°C and wishes to lower the outflow temperature even further, to 120°C.

As a result, various modifications of the technical installations at the hospital are currently being made so it will remain possible to heat the hospital to a suitable temperature level. These modifications are scheduled for completion by the end of 2012. Once they are completed, Vestforbrænding will be able to lower the outflow temperature.

There is only one service pipe for district heating. It is considered unlikely that this pipe will be enough to supply heating for the hospital after addition of the planned extension.

High-voltage current

When the hospital was built, two power cables from the Grønnegården sub-station (operated by DONG Energy) were laid. In 2009, these cables were supplemented by an additional cable, also from the Grønnegården sub-station. In connection with the installation of this supplementary cable, two additional cables were buried in the same cable route for later connection; the intention was for them to replace the original two cables, which already need to be replaced now.

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The three current power cables are connected to an annular (high-voltage) connection with several sub-stations, each of which supplies power to specific parts of the hospital. In addition to the ordinary mains supply (called 'Supply A'), the hospital has a standby emergency power system based on diesel generators with a capacity equivalent to about 20% of the total power supply needed by the hospital (Supply B). Furthermore, there is a UPS system (Supply C).

As the hospital is an area hospital with an acute admissions function, an outline project has been prepared for a new high-voltage standby power system with 100% capacity which would replace the current standby power system.

Low-voltage current

The hospital has a number of computer installations in the form of PDS sockets connected with distribution boxes, which are then connected through fibre cables to the Region's server unit at the hospital. In addition, there are various types of patient call systems, the oldest of which are in the high-rise ward building. Because of a lack of spare parts, the old systems are difficult to service. Other patient call systems are of a more recent date and still in working order, although they are obsolete. A centrally controlled clock system has been installed in some parts of the hospital: this system has not been used in connection with recent conversions and extensions. There is also a centralised aerial system at the hospital, and a very large proportion of the hospital's technical plant is monitored and controlled by a central control and management (CTS) system.

Medical gases

The hospital has three central systems for medical gases: oxygen, vacuum and compressed air. There is also a central natural gas supply system that supplies natural gas to various parts of the hospital. All the central systems are based on a one-string system with a central supply system located at the hospital. Any extension of these systems will require prior investigations.

The current compressed air system supplies atmospheric air, not purified air.

GEOTECHNICAL SURVEYS

A geotechnical survey of the open areas at the hospital site has been performed. The results are set out in a report that presents the preliminary assessments of soil and groundwater conditions and some recommendations concerning building foundation methods, drainage and excavation pits and advice on how to keep the building site dry and on supplementary surveys that could be carried out.

The report finds that, dependent on their location and depth, shallow foundations will be sufficient for future buildings in some areas of the site, while deep foundations in the form of point and line foundations and drilled foundations will be required in other areas. In certain scenarios (eg buildings without basements) and in certain areas, pile foundations may be preferable. Depending on the location and on whether there is a basement in the building, floors may be either ground decks or suspended decks resting on the foundations/piles.

Non-delimited oil contamination was found in a single boring to the west of the entrance hall building (Block 2); contaminated soil has also previously been found at the site.

For more information, see the geotechnical survey report that is part of the annexes.

Caption:

Architecture

Herlev Hospital was designed by architects Bornebusch, Brüel & Selchau and inaugurated in 1976. The building complex is called a modernist classic in Danish architecture with a high preservation value.

THE ASSIGNMENT

[page 44]

THE COMPETITION ASSIGNMENT

The competition assignment comprises three main elements:
• MASTERPLAN, full extension and Stage One alone
• NEW BUILDING for General Acute Admissions (FAM) and Woman/Child Building (KBB), etc.
• TENDER FOR CONSULTANCY SERVICES

[page 45]

MASTERPLAN

The masterplan must provide ease of overview and ensure rational planning of the future extension of Herlev Hospital. In addition to determining the location of the new buildings planned, and their interplay with the already existing hospital facilities, the plan must show possible future extensions so as to ensure that current and future buildings will form a coherent whole.

The masterplan for Stage One and later stages must illustrate and describe the following:

- Main arrival to the hospital
- The location of new buildings
- Traffic conditions
- The interplay between new and existing buildings
- Landscaping, including the spatial hierarchy

GENERAL LAYOUT AND ORGANISATION

Masterplan, full extension

In addition to illustrating existing buildings and already planned new buildings (extensions to Blocks 07 and 09), the masterplan must illustrate the location of new buildings in Stage One and in subsequent stages so as to create a well-functioning whole.

The masterplan must comprise the entire hospital site, including the existing residential buildings along Runddyssen. The residential buildings will remain unchanged and do not form part of the competition assignment. In addition to the detailed masterplan, entrants are requested to submit diagrams showing the general concept proposed as well as the organisation of traffic at the site.

The site plan in the annexes shows the existing buildings and the already determined new units (extension to service building [Block 07] and to the chapel [Block 09]). In connection with the service building, space must be set aside for further extension towards the west as shown on the site plan. Existing temporary buildings will be removed.

In addition to the existing buildings, the masterplan including all extensions must comprise the following units and indicate their gross floor areas including basements:

FAM and KBB	51,900 m^2
Standby power system	800 m^2
Extension to service building (Block 07)	8,500 m^2
Extension to chapel (Block 09)	600 m^2
Patient hotel	7,200 m^2
Conference facilities	2,500 m^2
Office building	11,300 m^2
Church, praying rooms, etc	1,000 m^2
Research school	7,500 m^2
New units, total gross floor area	91,300 m^2

In addition, there must be a helipad (on building or on the ground) and an as yet undetermined area for retail and commercial facilities as well as a day-care facility.

Furthermore, an area must be set aside for parking spaces inside buildings. The extent of such parking areas will depend on the individual masterplan proposal, but entrants are requested to locate as many parking spaces as possible close to the hospital and to provide well-functioning open areas that are as large as possible.

The nursing school (Block 12) must be preserved in Stage One, but after this stage it is left to the entrants to decide whether it should be preserved, converted or closed down in the subsequent stages.

Masterplan, Stage One alone

The masterplan for Stage One must illustrate the interplay between existing buildings, new buildings and the landscape.

Entrants are requested to illustrate the main arrival to the hospital, which may be either in a new shared arrival area or in the form of arrival to the new buildings through the existing main entrance. Arrival to the FAM must be through a separate entrance.

In addition to the current buildings, the masterplan for Stage One must comprise the following units (gross floor areas including basements):

FAM and KBB	51,900 m^2
Standby power system	800 m^2
Extension to service building (Block 7)	8,500 m^2
Extension to chapel (Block 9)	600 m^2
New units in Stage One, total gross floor area	61,800 m^2

The necessary preparatory works for the establishment of a helipad (on building or on the ground) must be performed during Stage One.

The extent of parking facilities inside building structures in Stage One will depend on the masterplan proposed.

The nursing school (Block 12) and the temporary buildings must be preserved in Stage One. It will probably not be possible to remove the temporary buildings until some later stage or stages.

More detailed descriptions of the individual units are given below.

I INDIVIDUAL UNITS

General Acute Admissions (FAM) and Woman/Child Building (KBB)

The requirements applying to the layout and location of the FAM and KBB are set out on pages 53-81.

Standby power plant

This building may be located so that it is connected with the car park or the service building (Block 07). An approximately 40-metre-high chimney will be needed for the standby power plant. When deciding the location of the standby power plant, entrants are requested to ensure easy vehicular access and to comply with the noise limits applicable in relation to neighbouring facilities and with noise and vibration requirements relating to the operation of the hospital. Emissions and access for incoming helicopters must also be taken into account in deciding the location of the chimney.

Parking inside building structures

The layout and organisation of parking facilities inside building structures (and on site) will depend on the principles the entrants choose to govern their masterplan, but it is crucial that a functional, simple and safe traffic and parking solution that also provides optimum landscape qualities is achieved.

The number of parking spaces inside building structures must be considered in relation to keeping areas open for recreational purposes. It must be possible to secure parking areas inside building structures at night.

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Extension to service building and new service delivery area

The extension to the service building (Block 7) has already been determined, so its realisation will not be dependent on the time schedule for the new buildings covered by this competition brief. The area to the west of the service building (Block 7) must be set aside for any future extensions to the service building (Block 7).

The proposal for the extension to the service building (Block 7) includes a lowered area designated as a container storage area and service delivery area. This layout ensures that goods and waste can be transported to and from the service delivery area through all buildings without any changes in level.

Chapel

The chapel is the venue of approximately 1,900 funeral services/releases each year. Entrants are therefore requested to take the need for vehicular access and exit for relatives and hearses into account in their design.

Just like the extension to the service building (Block 7), the extension to the chapel has already been determined. Its layout and location appear from the annexes.

Patient hotel

A single united patient hotel facility in an attractive, non-hospital-like setting is required. In this hotel, patients should be able to have more peace and quiet, more freedom of action and a greater right to make their own decisions than they would if they had been admitted as an inpatient to the hospital. The patient hospital is intended for patients who are able to manage on their own, as well as for relatives and sometimes also conference participants. The hotel must therefore have an easily accessible and visible entrance of its own, close to good parking facilities.

There must be easy access between the hotel and the new and existing hospital buildings.

Approximately 100 hotel rooms are required, supplied with relevant shared facilities such as a lobby, a reception, a reception area and a kitchen.

Conference facilities

Conference facilities are required, possibly in connection with the research school or the patient hotel, so that facilities such as reception, lobby, restaurant and kitchen can be shared.

Office building

As a consequence of the extension of the hospital, a new office building is needed. It must meet the surface area standards that apply to office workplaces (see annexes).

The building will primarily be used for personal workstations for administrative staff and managing clinical staff. The building will also have an outward-oriented function as a point of contact for patients, relatives and staff.

When deciding the location of the building, entrants are therefore requested to ensure that there is an easily accessible and visible entrance route for people from the outside, while also ensuring that the building is located close to existing and new buildings.

Church, prayer room, etc

The masterplan must indicate a proposed location a church, a quiet room (non-religious) and a Muslim prayer room, all of which must provide a dignified setting for people affected by a disease-related crisis for use for church services, pastoral care and personal prayers. Funeral services will still be held in the chapel, just as they are now.

It is up to the entrants to decide whether they will propose that all these functions be located in a separate building or should be integrated into the other buildings.

Research school

The competition promoter is contemplating submission of an application for funding for the establishment of a research school, but the financial position in this respect has not yet been clarified. Entrants are requested to propose a location for such a research school, for example together with the conference facilities and/or the office building.

Supplementary functions

When preparing their proposals for the later stages of the masterplan, entrants are requested to take a number of supplementary functions into account. The surface areas required for these functions have not been determined, so it is up to the entrants to propose both their extent and layout in a diagrammatic form.

Covered, temperature-regulated areas

There must be a number of covered, temperature-regulated areas to supplement or connect the various units.

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Retail and commercial facilities

Entrants are also requested to present proposals for the integration of retail and commercial facilities, for example in connection with the patient hotel or the office building. Such facilities would add life to the public areas connected with the Culture Axis and enable patients, relatives and staff to benefit from the facilities, eg using the cafés, the advisory centres, etc.

Daycare facility

Furthermore, entrants are requested to illustrate how a daycare facility for children of hospital employees can be integrated into the masterplan.

TRAFFIC

Number of patients, visitors and members of staff

In 2015, the flow of people at Herlev Hospital will be dominated by two large groups. One group will be the outpatients that come to the hospital for examinations, treatment and check-ups. With the anticipated increase in outpatient activities, it is estimated that, in 2015, roughly 2,500 outpatients will come to the hospital on each of the five weekdays.

The other large group is made up of the employees of the hospital. At present, the number of staff in 2015 is not known, one reason being that the final streamlining of hospital operations has not been fully determined, but the number of employees is expected to increase from the current 4,000 employees or so to a little over 5,000. It is estimated that between 2,500 and 3,000 employees will be at the hospital during normal day working hours on weekdays.

Together these two groups thus comprise in the region of 5,000 people coming to the hospital site every day. In addition, the bed units will have about 750 patients, which will most likely generate a daily flow of admitted/discharged patients of about 250 people.

In addition, there is relatives and visitors. There are no data showing the number of visitors, but it is estimated that it will be somewhere between 800 and 1000 people a day in 2015. The estimated number of acute patients admitted through FAM is 250 a day.

The total daily flow in 2015 is thus, in round figures, an estimated 6,500 people. Of these, about 5,000 will arrive and leave within normal day working hours, while the remaining 1,500 – including visitors – will be spread more evenly over the 24 hours of the day.

Traffic organisation

Smooth traffic flows to and from the hospital must be ensured for the various groups of hospital users (patients, visitors, relatives and staff) and for the various types of traffic, eg ambulances, helicopters and service delivery vehicles.

As shown in the diagram on page 49, all access for ambulances must be to FAM, to which there must also be easy access from the helicopter landing area. In addition, there must be access to the new buildings for patients, visitors, relatives, staff and service deliveries; patients, relatives and visitors must also have access to the current main entrance (Block 2) or possibly a new shared main entrance.

Furthermore, relatives and visitors must have access to the chapel; staff must have access to the service building (Block 7) and the treatment building; and service delivery vehicles must have access to the service building. Patients who come to the hospital frequently must also have direct access to the treatment building (Block 5).

The diagram shows the general principles governing the future organisation of traffic, with a special focus on the distribution of acute patients and outpatients. The specific organisation will depend on the actual location of the new buildings chosen by the entrants both in Stage One and in later stages.

The masterplan proposes that Herlev Ringvej be the main access to Herlev Hospital, as it is today. Whether this main access route should be supplemented by other access and exit routes leading to and from the surrounding network of roads is up to the entrants to decide on the basis of the main concept proposal. Exiting to Hjortespringvej will not be possible along Turkisvej, and the layout of an exit area must be coordinated with the layout of paths and the Culture Axis. If supplementary access routes are proposed, entrants must ensure that there will be no through traffic at the hospital site.

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As described in the section entitled 'Current conditions', traffic loads are very heavy at the Langdyssen/Herlev Ringvej junction. Traffic flows at the junctions should be improved in connection with the future extension of the hospital. Entries must show that a significant improvement of the traffic flow capacity in afternoon peak hours can be achieved. The extent of the improvement must exceed what is required by the anticipated increase in activities, as current conditions are unsatisfactory.

Entrants are requested to illustrate the future road and path structure, including future access routes to the hospital. They must show a solution that takes into account the large number of cars of employees and relatives, ambulances driving at high speed, and cyclists and pedestrians going to and from the hospital. Access and parking conditions for people with disabilities should especially be taken into consideration.

Road safety must be given high priority and a simple and smooth flow of traffic ensured. It is crucial that ambulances and private cars bringing patients to the acute admissions unit can reach the entrance fast and without obstacles. There must also be safe, easily accessible and logical paths for vulnerable road-users to and from public transport, car parks, etc.

Parking requirements

Entrants are requested to propose a sensible scheme for the location of parking spaces in building structures and on site in a way that is consistent with future traffic flows at the hospital site. Parking spaces inside building structures must be established as early as Stage One. The extent of parking areas inside building structures both in Stage One and when the hospital extension is complete depend on the individual masterplan proposals.

There are currently 2,030 parking spaces at the competition site. An additional 860 spaces are needed in connection with the new building facilities in Stage One, so that the total will be 3,200 spaces. The parking requirements have been calculated on the basis of the local authority's tentative requirement of one parking space for each 40 m^2 of net floor area. The final number of parking spaces cannot be determined until the authorities have approved the building project.

Caption:

Traffic principles: Stage One

The diagram shows the situation in Stage One. In later stages, there must also be access to the patient hotel, the office building, etc.

Patients
Visitors/relatives
Staff
Ambulances
Service deliveries

Metro station and Ring Line station

Entrants are requested to illustrate where an area can be set aside for a future Metro station for a Metro line that ends at Herlev Hospital and to show how a connection can be created to the future light railway. The trajectory of the light railway is to be located at the centre of Ring Road 3.

Helipad

The masterplan must feature a landing area for helicopters. Currently it is expected that two types of helicopters will be used: medical helicopters weighing 3.500 kilos and Danish Defence emergency helicopters weighing 15,000 kilos. The maximum weights to be used in calculations are 5,000 kilos and 20,000 kilos respectively. It is expected that there will be about one hundred landings each year.

It is desirable that the helipad be established as close as possible to the acute admissions unit, possibly on the roof of one of the new buildings. When deciding the location of the helipad, entrants are requested to take noise levels at the hospital and at neighbouring sites as well as turbulence from the existing ward tower and the new buildings into account.

Notes setting out requirements relative to the helipad and noise assessments relating to helicopter operations are part of the annexes to this competition brief.

LANDSCAPE AND OPEN AREAS

The treatment of the landscape must be such that attractive, usable open areas in which people are protected against the prevailing winds are created, possibly in the form of roof gardens. The planting, surfacing and landscaping must create a versatile environment that allows both physical activity (eg exercise tracks, exercise equipment) and undisturbed rest and relaxation (eg sunny spots, scent garden).

Furthermore, entrants must take into account that a playground for patients in the paediatric department is needed. The playground will be used not only by children staying at the hospital as patients but also by their sisters and brothers and by children of inpatients. The establishment of one or more playgrounds should also be considered in the context of the Cultural Axis concept and the recommendation of making the hospital open to the neighbouring community.

The Cultural Axis must be a public path that connects the area in front of the hospital with Herlev Bymidte. It should include features such as reuse of rainwater, gathering places, areas for rest and relaxation, venues for special events, pictorial art, sculptures, planting, paving and lighting to highlight and emphasise the flow of the path.

As the landscape around the buildings and not least the roof surfaces of the new buildings make up a large proportion of the view from many patient rooms, it is important that the landscape offers good experiences also for patients who only see it from above.

It is important that the landscape is a coherent whole even in Stage One and that areas set aside for later stages will not look as empty building sites.

The treatment of landscape spaces must reflect the spatial hierarchy, show that the outdoor spaces interplay with building functions and building architecture and ensure a good transition between public spaces and the areas close to the hospital. Finally, the landscaping must emphasise that Herlev Hospital has an identity of its own, while at the same time acknowledging the coherence with the town of Herlev in the form of the Cultural Axis.

NEW BUILDING FACILITIES

NEW BUILDING FACILITIES: FAM + KBB

The scheme for new buildings must include a concept for the General Admissions Unit (FAM) and the Woman/Child Building (KBB) as well as proposals for parking inside building structures and a standby power plant. The new facilities may be contained in one or more buildings that must be interconnected and also connected with the existing hospital buildings. However, car parks may be located in separate building structures. Entries must illustrate and describe the following:

- The general architectural concept
- The concept for the location of units and internal logistics
- The principles governing the flexibility of the building facilities
- The concept for the implementation of sustainable measures
- The concept for the integration of art into the buildings

Entrants should preferably also present proposals for the implementation of measures known from other sectors that can help optimise operations.

Entries should present the overall concept very clearly and should in this respect illustrate where the main functions are located and describe the interrelationship between units and functions. Entries must illustrate internal logistics and show the flows of patients and staff. Furthermore, the connections with existing buildings must be illustrated.

MAIN CONCEPT

The following departments are to be contained in new buildings:

Department A: FAM
Department D: Gastro Unit
Department E: Paediatrics
Department G: Gynaecology/Obstetrics
Department I: Intensive Care

Additional functions to be included are the Acute Surgery area, Physiotherapy and Occupational Therapy, Clinical Biochemistry, etc.

Herlev Hospital would like to be perceived as the ‘accommodating hospital’, where the family is important. This means that families must be involved to a greater extent, both physically in the form of active participation in patient care when a family member is hospitalised and psychologically in the form of involvement in decision-making. The family concept means greater openness and makes demands on the physical setting, as there must be ‘room’ for families.

Rational operation is extremely important at a time when human resources are scarce and speedy, effective, flexible and coherent patient pathways are desirable. Furthermore, high quality and patient safety are important. Optimal physical location of the functions and flexibility in the layout of spaces will ensure optimum utilisation of the physical framework in the future.

Correct and fast triage of patients will ensure the high quality that is considered one of the core services that Herlev Hospital offers its patients. Interdependence and optimal location of functions in relation to each other should be based on individual patient pathways (both acute and elective patient pathways). The overall concept should therefore take patient pathways into account and match them, both in terms of the physical framework and in terms of the physical location of the functions in relation to each other. Closeness is particularly important in acute patient pathways.

Floor areas

Entrants should note that the net floor area for each unit is broken down into main functions (outpatients clinics, patient rooms, office areas, etc) and that the main function areas thus include areas for all necessary ancillary rooms such as utility rooms and storage rooms. Furthermore, there must be reception areas, waiting areas and other facilities for staff, patients and visitors. These areas are included in the gross floor area to net floor area ratio, which is 2:0.

The gross floor areas are thus the sum of net floor areas and circulation areas (corridors, staircases, lifts) plus technical areas (basements, plant rooms, tunnels) plus structures (exterior walls and partition walls).

The objective for entrants is to present a flexible solution in which the areas available are used optimally by allowing overlapping use of areas between individual units, eg waiting areas, operation theatres, preparation rooms and staff facilities). This will not only ensure rational work patterns but will also help create an attractive hospital environment with plenty of natural light and places for rest, relaxation and activity that will benefit staff, patients and relatives.

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The net floor area can be broken down as follows:

Department A: FAM

Admissions unit	2,415 m^2
Observation beds	3,865 m^2
FAM, total net floor area	6,280 m^2

KBB

Department D: Gastro Unit	3,600 m^2
Department E: Paediatrics	3,370 m^2
Department G: Gynaecology/Obstetrics	4,350 m^2
Department I: Intensive Care	1,400 m^2
Acute surgery area	2,800 m^2
Satellite functions:	
Physiotherapy/occupational therapy	300 m^2
Clinical biochemistry	250 m^2
Shared functions:	
Entrance and waiting areas	1,000 m^2
Shared staff facilities	1,400 m^2
Depots, workshops	1,200 m^2
KKB, total net floor area	19,670 m^2
FAM + KAB, total net floor area	29,950 m^2

Arrival

The arrival to KBB by elective patients and relative will to some extent depend on the arrival principles recommended by the entrants in their masterplan proposals. All acute patients (whether they arrive unassisted, by ambulance or by helicopter) must go direct to FAM. Women coming to deliver babies may either have direct access to the delivery area or be taken along a 'fast track' through FAM.

Flow between existing and new buildings

New buildings must be located where they will be in close contact with the existing hospital buildings, as illustrated in the diagram of future flows between new and existing buildings. There must be an indoor connection for patients between the new buildings and the ward tower (Block 1) and the treatment building (Block 5). In addition, there must be a connection for staff and service deliveries between the new buildings and the ward tower (Block 1), the treatment building (Block 5) and the service building (Block 7).

The contact between the new and the existing buildings may be ensured by using the two already existing tunnel connections. One of these tunnels connects the service building (Block 7), the treatment building (Block 5) and Block 12; the other connects the service building (Block 7, the treatment building (Block 5) and the ward tower (Block 1). The latter connection leads to the open air to the south of the ward tower and has thus been prepared for an extension to the hospital. Furthermore, a patient and staff connection from the new buildings to Level 04 of the treatment building is needed.

Entrants are requested to illustrate the overall flow between new and existing buildings and the internal flow in new buildings for the following groups:

- Patients
- Staff
- Service deliveries

One way of providing connection would be to use the two existing tunnels. Please see the section through existing buildings on page 36 and the drawings in the annexes to this competition brief.

Internal flow in new buildings

The physical framework must be conducive to the objective of having optimal patient pathways at the hospital, and the physical location of the various functions must ensure an optimal patient flow, while at the same time creating logical workflows for staff and logical flows for service transports.

The diagram on page 56 shows the overall patient flow in FAM and KBB.

The general acute admissions unit will play a significant role in the examination and treatment of acute medical and surgical patients at the hospital. The FAM wards will only have observation beds, from which patients will either be sent home, transferred to intensive care or admitted to an inpatient ward in the ward tower or in one of the new buildings.

The acute surgery area should have a central location, close to FAM, the Gastro Unit and the Department of Gynaecology/Obstetrics, all of which perform a considerable number of acute surgical procedures.

Block 7 – Service building
Block 5 – Treatment building
Block 1 – Ward tower

New building facilities
FAM + KBB
(about 52,000 m^2 gross floor area)
Block 12

Future flow between new and existing building facilities

Patients
Staff
Deliveries (clean/dirty)

OVERALL PATIENT FLOW FAM + KBB

Stationary bed in ward tower (possibly treatment in day surgery unit)

Staff

Shared staff facilities
Depots, workshops, etc

Surgery area

Surgery/Gastro

Orthopaedic surgery

Elective patients

Surgery
Gynaecology
Obstetrics

Acute surgery
observation beds

Physiotherapy
Occupational therapy

Clinical biochemistry

Intensive care
including wards

Gastro Unit
including wards

Paediatrics
including wards

Gynaecology/obstetrics
including wards

Delivery area

FAM including
Acute ambulance

Acute deliveries or
"fast track" via FAM

Acute
walking/driving

Helicopter

The Department of Orthopaedic Surgery will also be given opportunity to perform acute surgery in the new building facilities, but its main surgical activities will be gathered together in the existing surgery area in the treatment building.

The Gastro Unit, the Department of Paediatrics, the Department of Gynaecology/Obstetrics and the Intensive Care Unit must all have wards in the new building facilities.

In addition to the units mentioned above, the new building facilities must also contain Physiotherapy/Occupational Therapy and Clinical Biochemistry (outpatients) as well as a number of staff facilities, storerooms, workshops, etc. Like the existing buildings, the new buildings must have small storeroom and preparation facilities as well as cleaning rooms in connection with the various surgery, treatment and ward units.

Flexibility

To ensure that the physical facilities will be adaptable to changing needs and requirements in the future, the creation of a flexible physical framework is an important parameter and a point that must be given high priority. Flexibility must be provided in individual rooms but to an even greater extent within the building structures as a whole.

An important aspect of such flexibility is standardisation of building types and room categories, as such standardisation will make it possible to cater to future needs for extensions, combinations, new working methods, new technologies and new types of organisation.

Proximity

To facilitate entrants' work, a tool has been prepared for describing the above-mentioned interfaces. The principle of proximity is understood in a broad sense, as closeness may also be to a connection to the next building level. The requirement of proximity is described on the basis of an appropriate patient pathway, efficient use of staff resources and the interdependency of various functions. The following proximity definitions are used in the description of the external and internal relationship of functions:

- Immediate proximity: a distance of up to about 150 metres or a walking distance of one to two minutes.
- Closeness: a distance of up to about 300 metres or a walking distance of four to five minutes.
- Distance not crucial.

The description of relationships between functions, ie location and interdependency, falls within one of the following two categories:

- Location on same building level: lift cannot be used.
- Location is in the same cluster, with mutually dependent functions.

The following tables show the proximity requirements associated with the functions of various units.

PROXIMITY REQUIREMENTS
Department D: Gastro Unit

Function	Type	Proximity	Description	Location / dependency
Ward	Acute/ Elective	A – Surgery area B – Intensive care unit B – FAM	The ward receives acute and elective patients for examination, care and treatment. Patients whose condition is severe may need acute surgery and/or assistance from the intensive care unit.	It would serve the purpose of ensuring appropriate work procedures for on-duty staff to keep unit facilities as close to each other as possible, as doctors carry out functions at several addresses.
Surgery area	Acute/ Elective	B – FAM A – Perioperative unit B – Ward B – Intensive care unit	Acute patients who need surgery are prepared for surgery/stabilised in FAM. After surgery, patients are monitored in the perioperative unit for short or long periods of time, depending on their condition, and are then transferred to the ward.	Relatively few patients need (hyper) speedy intervention, which is why the distance is set at B.
Outpatient clinic	Elective	C – Ward	Elective patients for examination and consultation concerning test results, etc. Also hospitalised patients for ultrasound test and diagnostic endoscopies.	Patient service provided by the unit's doctors and nurses. May result in some transport of hospitalised patients who need examinations that are carried out in theoutpatient units in Block 05.
Conference room		B	The unit's medical staff meet in the morning for a general conference and during the day for other meeting purposes.	
On-duty rest rooms		A – Surgery area A – FAM B - Ward	Need for speedy assistance in acute situations for both doctors and nurses in the surgery area.	

PROXIMITY REQUIREMENTS
Department E: Paediatrics

Function	Type	Proximity	Description	Location / dependency
Ward	Acute/ Elective	A - Surgery area B – FAM	The ward receives acute patients via FAM for relatively long-term hospitalisation and also receives elective patients.	The ward is divided into age-based units.
Surgery area	Elective Acute	B – Surgery unit in Block 5 B – Surgery unit in new building facilities	Acute patients who need surgery are prepared for surgery/stabilised in FAM.	Postoperative 'ride' from the recovery unit to the ward must not be too long.
Neonatal unit	Acute	A – Delivery area A – Surgery area B – Ward	The neonatal unit is a ward for prematurely born infants. The patients must go quickly from delivery/C-section to the neonatal unit. Doctors' resources are used optimally, as on-duty medical teams work both in the neonatal unit and in FAM. Close collaboration between paediatrics and obstetrics.	The neonatal unit must be located close to the delivery area and the surgery area.
Outpatient clinic	Elective	B - Ward	Receives elective patients for examination and consultation about test results. Doctors often perform duties in wards during the day.	Should preferably be located on the ground floor. Must be easily accessible for prams and children with disabilities.
Intensive care		B – Ward		The condition of some children worsens during hospitalisation, and they need intensive care. The on-duty team in the Paediatrics Department must regularly check on these patients.
On-duty rest rooms		A – FAM	Need for speedy assistance from doctors and nurses in acute	

situations

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PROXIMITY REQUIREMENTS
Department G: Gynaecology

Function	Type	Proximity	Description	Location / dependency
Ward	Acute/ Elective	A - Surgery area B – FAM	The ward receives acute and elective patients for examination, observation, care and treatment. Acute patients are admitted via FAM and viaoutpatient clinic.	Must be close to the acute surgery area. Patients will be attended to by doctors who also have other functions.
Surgery area	Elective and acute	A and B	The surgery area is used for acute and elective surgery and for C-sections.	Must be located close to the delivery area and the neonatal unit. Does not need to be as close to the ward.
Gynaecological outpatient clinics	Elective	B - Ward	Elective day function. Ordinary examinations, ultrasound procedures, medical abortions, etc.	The department's doctors cover several functions during the day, which is why a relatively high level of proximity is desirable. Should preferably also be close to the fertility clinic.
Fertility clinic	Elective	B – Gynaecologicaloutpatient clinics	Independent function. Some patients go to both the outpatient clinic and the fertility clinic.	Should preferably be close to the gynaecological outpatient clinic.
On-duty rest rooms		A – Surgery area A – FAM B – Ward	Need for speedy assistance in acute situations, both for doctors and nurses in the surgery area and FAM.	Must be close to the surgery area and the acute admissions unit.

PROXIMITY REQUIREMENTS
Department G: Obstetrics

Function	Type	Proximity	Description	Location / dependency
Obstetric ward (pregnant women)	Elective/ Acute	B – Delivery area	Pregnant patients are admitted to this unit if they are unable to be at home for various reasons.	Should be relatively close to the delivery area.
Obstetric ward (maternity)	Elective	B – Delivery area B – Neonatal unit	Patients are admitted here after childbirth if the woman/family cannot be sent home directly after delivery.	Should be relatively close to the delivery area and the neonatal unit.
Delivery area	Acute/ elective	A – Surgery area A – Neonatal unit	The delivery area is a physically coherent area that comprises delivery rooms, observation rooms, etc.	The delivery area must be located close to the surgery area and the neonatal unit.
Obstetric outpatient clinic	Elective	C - Ward	Scans and medical examinations of pregnant women are performed in the clinic.	The obstetric outpatient clinics for ultrasound scanning and examination of pregnant women must be located at the same place, preferably close to the other functions in the department in order to allow flexible use of staff resources.
Midwife consultation	Elective	C	Outpatient clinics: Healthy women for planned check-ups.	Need not have a central location. The midwife consultation will be located in Block 12 in Stage One.
On-duty rest rooms		A – Surgery area A – FAM B – Delivery area	Need for speedy assistance in acute situations both for doctors and nurses in the surgery area and in FAM. The delivery area and C-sections area are 24/7 activities with varied workloads.	Must be close to the delivery area, the surgery area, the neonatal unit and the acute admissions unit.

DEPARTMENT A: GENERAL ACUTE ADMISSIONS (FAM)

Outline of core functions
The overall functions in FAM are

- Triage, referral and waiting area
- Examination, treatment and diagnostics
- Short-term observation unit (less than 12 hours)
- Observation unit (one to two days)
- Out-of-hours service doctors

All acute patients, self-referring patients, referred patients and patients brought to Herlev Hospital by ambulance must go through FAM. In this shared organisational unit, staff work together to treat unassessed patients across specialties. Staff also endeavour to ensure a coherent patient pathway for acute patients.

It is expected that the annual numbers of patients arriving via FAM will be 90,000 and that the daily number of patients will be as many as 250.

The Department's vision
The vision is to provide high-quality assessment and treatment of acute patients all around the clock: with the right organisation, competencies, diagnostic technology and physical framework, FAM will set the standard for the assessment and treatment of acute patients in Denmark.

More specifically, the vision is for the new physical framework for FAM to be friendly, flexible and characterised by ease of overview and facilitating effective organisation of patient pathways to ensure fast and certain diagnosis and treatment.

It is also part of the vision that the layout and organisation of the department allows the different patient categories to have the best possible experience, in particular children, families with young children and patients with various functional impairments.

Overall flow
In the reception and triage area, acute patients are sorted into groups based on their symptoms, conditions and level of need for acute treatment. Patient pathways are parallel in multidisciplinary teams headed by the doctor authorised to make decisions. The organisation must be such that seriously ill or injured people will be identified fast.

Patients by ambulance			Trauma unit		Acute/elective surgery
Patients from GP/out-of-hours doctor	Registration Triage Prioritisation	Waiting on stretcher or in bed	Treatment/ examination, standard	Observation bed, acute optimisation	
Small injuries		Waiting in chair	Treatment/ examination, special	Observation bed, 12/24 hours	Ward
Self-referring patients					
		Waiting area for children	Treatment/ examination, children	Exit lounge/ nursing home	Intensive care
Maternity cases		'Fast track'	Delivery area	Paediatrics Department	Exit lounge, home/ nursing home

OVERALL PATIENT FLOW
General Acute Admissions

Standardised patient pathways based on separating patients with minor injuries from patients needing observation or admission to a ward must ensure high quality, efficiency and good patient pathways.

When planning FAM, entrants are requested to have a special focus on the pathways for children and families with young children. It must be ensured that reception, triage and examinations can take place in a setting that will make children feel safe and secure and will provide some distraction. Furthermore, the area for children must be screened off so that children will not be exposed to scenes that may scare them.

Floor areas

Reception	2,415 m^2
Observation beds	3,865 m^2
FAM, total net floor area	6,280 m^2

Professional communities

All clinical and interdisciplinary departments work together. In particular, the following departments will form part of interdisciplinary teams:

- Internal Medicine Department O
- Gastro Unit
- Orthopaedic Department
- Urology Department
- Paediatric Department
- Cardiologic Department
- Medical Haematology Department
- Neurology Department
- Clinical Biochemistry Department
- Radiology Department

Reception

It is important that there are parking and drop-off areas, an area for taxis and an area for patient transport vehicles adjacent to FAM.

It must be possible for ambulance to go via a gate with access control direct to a heated ambulance hall with direct access to the acute admissions unit and the trauma rooms.

There must be easy access to the decontamination facility for contaminated patients and to a mortuary. There must also be a coffee and waiting room for ambulance crews.

Like the ambulance entrance, the connection from the helipad must follow its own direct track to the acute admissions unit.

A reception area must be located at the entrance for referred patients, self-referring patients and relatives. Behind the counter, there must be facilities for the registration of patients and coordination of activities in the acute admissions unit.

Triage
Close to the reception there must be a triage area where patients can be assessed and sorted into different groups such as minor injuries, observation, acute treatment, admission, etc or possibly be sent home.

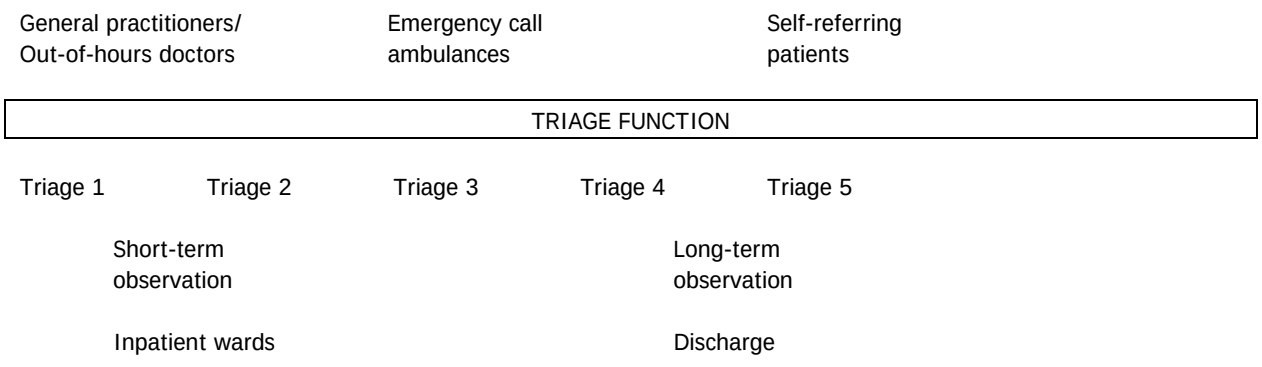
Waiting areas
A waiting area for patients and relatives must be located with immediate connection to the admissions and triage areas. It must be divided into an area for children and one for adults, and preferably also an area for relatives. There must be room for recumbent patients, visual contact with staff, self-service beverages, etc, just as there must be easy access to accessible toilets with baby changing facilities.

Treatment rooms
For the sake of flexibility, all standard and special treatment rooms must have the same size and basic layout. The following special rooms are required:

- Room for medical patients, with echocardiograph and ultrasound equipment
- Room for surgical patients needing only minor surgical procedures
- Room for gynaecological examinations
- Room for plaster placement
- Room for the treatment of burn injuries, with floor drain, shower and room for a stretcher
- Room for endoscopies with special equipment and ancillary room

The trauma treatment room is equipped to handle people with severe injuries/life-threatening injuries and should basically be organised as an operating theatre.

Illustration:



Triage function
Triage involving assessment and sorting of patients into various tracks at the hospital.

The trauma rooms must be laid out so that they can be combined in the case of procedures that require extra space. They must be located in continuation of the ambulance hall and close to the diagnostic unit, with fast connection to the acute surgery unit.

Mortuary rooms
Mortuary rooms with associated interview rooms must be located adjacent to the trauma rooms, and there must be a good connection from the mortuary rooms to the chapel.

Diagnostics
The diagnostics units must comprise the following: three X-ray rooms, two CT scanners, one MR scanner, a room for the drawing of blood samples with several bays for blood sampling, a point-of-care analysis laboratory with analysis equipment, PC workstations and a pneumatic post terminal.

During the day, the diagnostics unit will primarily provide services to FAM. In the period from 4 pm to 7 am, the diagnostics unit will provide services not only to FAM but also to the acute surgery centre, wards in the ward tower with admitted acute patients, and KBB.

Access from the acute admissions department and access from the other departments must be separate to avoid unnecessary mixing of patient categories. In particular, it is important that no children are in areas with acute adult patients and trauma patients.

Pneumatic post
There must be a pneumatic post terminal in the FAM analysis laboratory for the dispatch of samples to hospital laboratories in Blocks 5 and 7. Entrants are requested to document that the pneumatic post system is approved for the dispatch of blood samples, microbiological samples, pathological samples, plasma, etc.

Exit lounge
The waiting area must have room for stretchers/recumbent patients, and there must be an exit to the car park/taxi stand/patient transport vehicle area.

Out-of-hours doctor service
This service must have its own entrance and waiting area, but should have a logical connection with the reception in the acute admissions unit for the sake of patients referred from the out-of-hours doctor service to further examination or treatment in FAM.

Bed units
There must be room for 130 observation beds in the acute admissions area, organised in manageable units. It should be considered to organise them on the basis of functions, time zones and relevant specialties and patient groups. The following types of observation beds will be used:

A: Acute beds
B: Observation beds for 12-hour observation
C: Observation beds for observation for up to 24 hours

Administrative facilities
In the bed unit there must be three or four nursing stations located where there is ease of overview and where they ensure a logical division and administration of the areas with observation beds.

In FAM, there must be three nursing stations/command centres for the following operational areas:

1. Acute injuries area
2. Minor injuries area
3. Admissions area

These areas must be laid out as open office landscapes where there is visual contact with the associated operational areas, and there must be large IT screens showing the activities going on.

Three areas, each with ten dictation stations for doctors, must be located strategically in the acute admissions area. They must be screened off from patients and the operational areas, and there must be screens between the individual workstations.

A secretary station with workplaces for medical secretaries, a printer room and a storage room must be located outside the operational area.

Fifteen offices for area management and administrative staff must be located outside the operational areas, appropriately distributed in relation to the acute admissions area and the bed units.

Shared areas
The staff lounge must have plenty of light and a view of the outside. It must be located in a calm area away from patient areas and operative areas, and its layout and design must be conducive to rest and relaxation. The area should also have a seating area for eating as well as kitchen facilities.

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A lounge and meeting area for doctors laid out and designed to allow rest and relaxation must be located in a calm area away from patients and operational areas. The lounge and meeting area must have plenty of light and a view of the outside.

Other facilities required are a meeting room for staff conferences with seating for eight to ten people and a conference/training room with seating for 30 people.

Staff toilets must have an appropriate location close to the staff rooms and workstations.

Logistics, storerooms, etc
Few bed days for patients and a fast patient flow means that many beds are used. Entrants are requested to assess the dimensions and location of a buffer storage facility for clean and dirty beds in connection with their proposed bed transport solution.

A similarly extensive use of sterile products, utensils, clothes, linen and auxiliary equipment means that storerooms must be located and laid out appropriately in relation to activities and stocking supplies.

Cleaning rooms, waste rooms and utility rooms must be separate and have an appropriate location in terms of logistics, collection, etc.

There must be medication rooms both in the acute injuries area and in the bed areas. Local storerooms with standard blood products managed by the Department of Immunology must be located next to the medication rooms.

DEPARTMENT D: GASTRO UNIT

Outline of core functions

The Gastro Unit investigates, prevents, treats and checks for disease and infection in the gastrointestinal system, the spleen, the abdominal wall, the peritoneum, the liver, the pancreas and the excretory ducts of these organs.

The department performs both surgical and medical functions.

The department performs acute surgical procedures in the Midt Planning Area and also performs elective surgery in collaboration with Gentofte Hospital. The department has a large number of acute patients, which causes a great deal of fluctuation in the number of occupied beds and care loads.

Vision

It has been decided to locate the Gastro Unit in the new building facilities because it is desirable to have all acute surgery functions gathered together in the new facilities. This will optimise operations, since 80% of the department's patients are acute patients. Furthermore, some of the patients in the stationary wards become acute patients during their hospitalisation.

In order to optimise work flows, the department would like to have its wards as close as possible to the acute surgery area so that flexible use can be made of staff resources, as well as possible less use of orderlies.

Overall flow

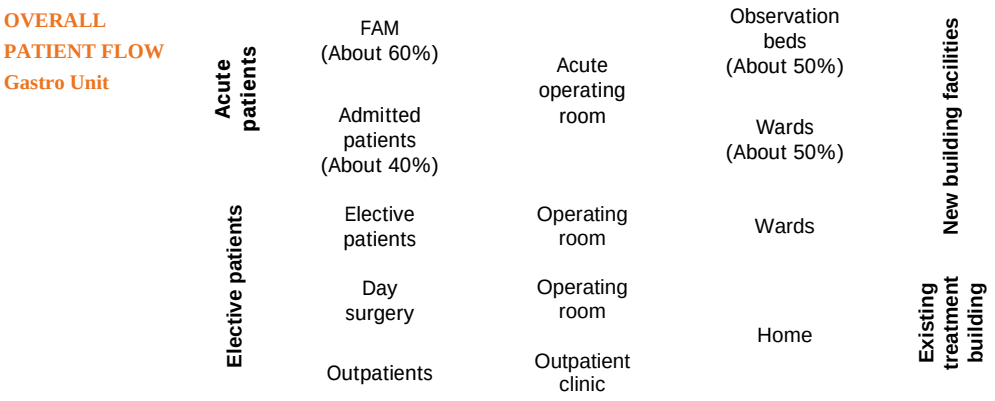
According to the department, it attends to a rough annual total of 15,000 patients in other departments. Arrival to the department must be very clear, and there must be attractive reception areas and lounges for patients and their families.

Floor areas

Beds (85 single-bed rooms)	3,400 m^2
Offices, etc	200 m^2
Gastro Unit, total net floor area	3,600 m^2

Wards

The department's ward area is large and must be divided into groups in order to ensure ease of overview for the staff. All patient rooms will be single-bed rooms with an ensuite bathroom and toilet.



The patient bedrooms must be designed in such a way that they encourage patients to be active and participate in their own care. Furthermore, it must be possible for one family member to spend the night in the room.

There must be facilities in connection with the ward that encourage patients to get out of bed, eg lounges where patients can eat together, go online or watch television. It must also be possible for patients to take walks or engage in other types of physical activity.

The ward must have workstations for staff, room for talks with relatives and colleagues, storerooms, etc.

It is highly desirable that green areas be established in connection with the wards in the new building facilities to create attractive views and a setting for short stays.

Outpatient facilities
The department's outpatient clinics/endoscopy unit and operating rooms for same-day surgery are currently located in the treatment building (Block 05), and they will remain there.

Staff working in the outpatient facilities will go to the treatment building to change clothes at the beginning of their work shift.

Administrative facilities
Office and meeting facilities for professors, PhD students, healthcare researchers and others are required.

Furthermore, a staff room so flexible that is can function as a morning conference room, a lunchroom and an ordinary staff room must be established, just as there must be kitchen facilities and staff toilets.

In addition, there must be access to outdoor areas.

Research and training facilities
In addition to premises for clinical training in the acute surgery area, the department has rooms for clinical endoscopy training in the existing treatment building (Block 5).

DEPARTMENT E: PAEDIATRICS

Outline of core functions
The Department of Paediatrics examines, treats and provides care to children with congenital or acquired diseases or deviations from normal functions in childhood. The department is also engaged in the prevention of and advice on diseases and in research and training activities.

The field of paediatrics is a age-defined and not an organ-defined specialty that comprises children from birth up to and including the age of 17. The department collaborates closely with 'adult' specialties, as paediatric patients are admitted to the department and doctors specialising in adult diseases act as medical consultants. In addition, there are a number of support functions.

The department has five overall sections:

- Neonatology
- Admission of children
- Young children
- Older children including adolescents
- Outpatient clinics

Vision
It is important that the meeting between the hospital system and the young patients and their relatives is a good experience that causes no unnecessary anxiety and tension.

Once the Department has moved into its new premises, it looks forward to increased collaboration with the Department of Gynaecology/Obstetrics, and this is expected to lead to both qualitative and operational improvements, as well as increased integration and synergy between the departments.

One of the objectives is to use the limited floor areas as efficiently as possible, while at the same time ensuring good professional cooperation in education, training, research, development of new treatments and optimised patient pathways.

Moreover, it is important that the new physical framework is adapted to families.

Overall flow
The department's arrival area must be accommodating in order not to frighten the young patients. It is important that the arrival routes are very clear and that reception facilities and waiting areas for patients and their relatives cater to the needs and requirements of children and adolescents.

ACUTE PATIENT FLOW Department of Paediatrics		Ward	
	Patients arriving via FAM		
		Acute surgery area	Wards
	Patients arriving via the social services/GPs		
		Child Protection Centre	Wards
	Patients arriving with the police (separate entrance)		

The new building facilities should be organised so that the above-mentioned areas, administrative facilities, education and training facilities, play areas, meeting rooms and other staff facilities can be used as shared facilities by both the Department of Paediatrics and the Department of Gynaecology/Obstetrics.

Floor areas

Outpatient clinics (17)	570 m^2
Beds (57 one-bed rooms)	2,280 m^2
Offices, etc	520 m^2
Department of Paediatrics, total net floor area	3,270 m^2

Wards
Both elective patients and acute patients received from FAM are admitted to the department's wards.

All patient rooms must be one-bed rooms with an ensuite bathroom and toilet. Entrants should note that, contrary to the case with other specialties, at least one of the patients' parents will be admitted to the hospital together with the child.

ELECTIVE PATIENT FLOW	Waiting area	Outpatient clinic	Home
Department of Paediatrics	Patients arriving via Reception	Surgery area New building facilities	Wards
	Wards	Surgery centre Block 5	
		Home	

Wards are divided into age groups in the following way:

- *Neonatal ward*. Must be located close to the delivery area, the C-section room and the obstetrics ward. Patient rooms must have beds for parents to sleep in. Staff must be able to monitor the rooms from the outside, so there must be a workstation located close to the rooms.
- *Ward for young children*. Must have room for beds for parents to sleep in.
- *Ward for older children, including a unit for adolescents (15-17 years)*. The adolescent unit must be a separate unit in the ward. Many patients in this group may benefit from sharing a room with another patient, while others will prefer to have a room of their own or share their room with an accompanying parent.

The wards must have isolation rooms, and in connection with the wards for older children and adolescents there must be school/teaching facilities with room for about four recumbent children and two teachers.

The wards must have workstations for staff, rooms for talks with relatives/colleagues, various storerooms, etc.

In connection with the wards, there must be shared areas for eating, access to play areas, computers with Internet access, etc, just as there must be facilities for physical activity.

A large lounge with kitchen facilities must be established for relatives so they can prepare light meals, surf the Internet, watch television, etc.

It is highly desirable that green areas be established at the wards in the new building facilities to serve as attractive views for patients confined to their bed and also for short stays and children playing.

Outpatient clinics
There is a considerable flow of patients in the department's outpatient clinics, to which there should be easy access from the outside. The outpatient clinics and associated waiting areas must be divided into the following sections:

- Endocrinology
- Diabetes patients
- Patients with severe disabilities
- Other neuropaediatric patients
- Social paediatrics
- General paediatrics

In addition to the paediatric patient, there is always at least one parent present in the consultation room in the outpatient clinics.

it is necessary for the outpatient clinics to be close to physiotherapists and occupational therapists and their training facilities. There must also be a connection to the outpatient clinical biochemistry facilities.

Administrative facilities
Office and meeting facilities for professors, PhD students, healthcare researchers and others must be established in the department. The administrative section should be located close to the outpatient facilities. There must also be office facilities for a psychologist/social worker.

There must be a staff room which is flexible enough to serve as a morning conference room, a lunchroom and an ordinary staff room. Furthermore, kitchen facilities and staff toilets must be established.

There must be access to outdoor areas.

Research and training facilities
The facilities for research and training must be located together close to the outpatient area, as most of the department's research is related to outpatients.

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Facilities must be provided for a relatively small department laboratory and premises for clinical patient-oriented research, ie blood sampling, stress tests, etc, and rooms for pre- and post-graduate education and training.

Child Protection Centre
This is a regional centre that diagnoses and treats children who have been injured physically and/or mentally. Its competence areas are medical care, nursing, psychology, pedagogy and social guidance. The Centre works closely with the services, the police and forensic medicine services.

The Centre must have a separate entrance with a screened-off waiting area that will primarily be used by police officers, social workers and forensic scientists. In addition to this entrance, there must be an entrance from the Department of Paediatrics.

Entrants are requested to present proposals for the location of the Child Protection Centre in connection with the Department of Paediatrics. The floor area requirement is estimated at 100-150 m^2, which must be included in the total area set aside for the Department.

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DEPARTMENT G: GYNAECOLOGY/OBSTETRICS

Outline of core functions
The department has a gynaecological unit comprising the following sections:

- *General gynaecocology*. This section treats women with benign gynaecological disorders including infections, urogynaecologic diseases, incontinence, pelvic disorders, pain, endometriosis, hormonal disorders and menstrual problems.

- *Gynaeological oncology*. This section treats women with cancer or pre-cancerous conditions and also provides palliative care to women with gynaecological cancer.

- *Fertility clinic*. The clinic treats people with fertility problems, and includes a sexological clinic where both the hospital's own gynaecological patients and patients referred to the clinic from other specialities are treated.

- The department also has an obstetrics unit comprising the following sections:

- *Obstetrics section*. This section diagnoses, treats and monitors pregnant women after their nineteenth week of pregnancy. This includes treatment of complications in early pregnancy, abortions, pregnancy examinations, ultrasound examinations, and deliveries, ie maternity care for about 4,500 women, including pregnant women with most types of pregnancy complications.

Vision
After the relocation to new facilities, the Department looks forward to more extensive collaboration between the Department of Paediatrics and the Department of Gynaecology/Obstetrics, and also to achieving both qualitative and operational improvements as well as increased integration and synergy between the departments.

One of the department's objectives is to use the limited floor area available as efficiently as possible, while at the same time ensuring good professional collaboration in the fields of education, training, research, development of new treatment methods and optimisation of patient pathways.

Both in the gynaecology and obstetrics areas it is important to adapt the physical framework to the needs and requirements of families.

Overall flow
The arrival routes to the department must be very clear, and there must be a reception and waiting facilities for patients and their relatives.

The new building facilities should be laid out and organised in such a way that the above-mentioned areas, administrative facilities, education and training facilities, play areas, conference rooms and other staff facilities can be shared by the Department of Paediatrics and the Department of Gynaecology/Obstetrics.

Floor areas

Outpatient clinics (13)	390 m^2
Beds (23 one-bed rooms)	920 m^2
Gynaecology, total net floor area	1,310 m^2
Outpatient clinics (16)	470 m^2
Beds (31 one-bed rooms)	1,240 m^2
Delivery rooms (10), delivery area	700 m^2
Obstetrics, total net floor area	2,410 m^2
Shared office areas, etc, net	630 m^2
Department of Gynaecology/Obstetrics, total net	4,350 m^2

Gynaecological wards
Both electively operated patients and acute gynaecological patients from FAM are admitted to the wards.

All patient rooms must be one-bed rooms with an ensuite bathroom and toilet, and they must be laid out in such a way that they encourage patients to be active and take part in their own care. In addition, it must be possible for one family member to stay overnight in each patient room.

In connection with the wards, there must be facilities that encourage patients to get out of bed, eg lounges where patients can have their meals together, where there is Internet access, a television, etc. It must also be possible for patients to go on walks or engage in some other kind of physical activity.

ACUTE PATIENT FLOW Department of Gynaecology/ Obstetrics	Gynaecological patient arriving via FAM	Acute surgery area	Gynaecological ward
			Surgery Area
		Gynaecological ward	Home
		Delivery area	Home
	Obstetric patient arriving via ‘fast track’ or having bypassed FAM	Acute surgery area	Observation ward
		Observation ward	
		Home	

It is highly desirable that green areas be established in connection with the wards in the new building facilities to create attractive views and a setting for short stays.

It must be possible to place patients in the palliative phase in a special screened ward that also provides adequate space for relatives in the form of lounges that can be used by individual families, just as there must be areas where patients can be gathered for communal activities such as listening to music, lectures and the like. This group of patients must have access to outdoor areas.

The ward must include workstations for staff, a room for talks with relatives/colleagues, various storerooms, etc.

Obstetric ward
Both pregnant women and women who have given birth are admitted to the obstetric ward (in the prenatal unit and the maternity unit respectively). A flexible division between the two types of patients is desired. The prenatal ward should be closest to the delivery area.

Patient rooms must be similar to those in the gynaecological ward. Patient rooms in the maternity ward should feature a baby changing area and provide good conditions for breastfeeding.

The ward must also have workstations for staff, from where staff must be able to monitor high-risk patients in the prenatal ward. There must also be a room for talks with relatives/colleagues, a patient kitchen and lounges with tea kitchens for patients and their families.

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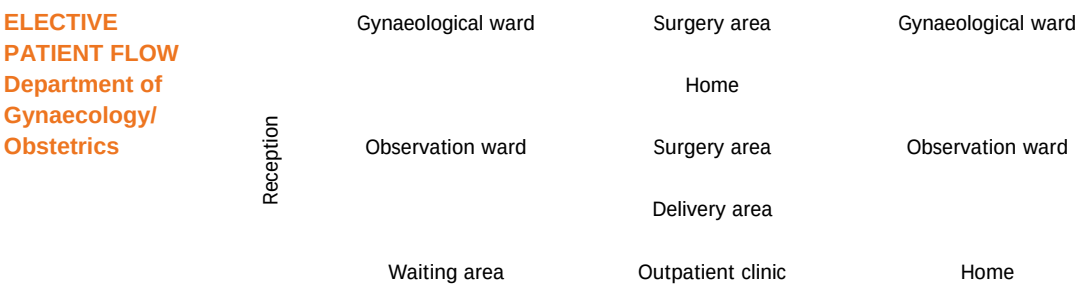

In addition, there must be facilities for group teaching and postnatal exercise classes.

Delivery area
The hospital currently has an obstetric admission unit and a delivery suite. The vision is to combine the two functions and establish a coherent delivery area in the new building facilities. All women in labour will be received in this area, as will pregnant women with complications that need to be assessed before delivery.

The delivery area must have uniform delivery rooms in which both complicated and uncomplicated deliveries can take place. In addition there must be observation and treatment rooms as well as separate lounges for acutely admitted women in labour. Furthermore, the area must have lounges for patients and relatives.

For patients who are going to deliver or have delivered a stillborn child, there must be a special quiet room where the family can say their final goodbyes.

Administratively, the delivery area will be managed as a united whole, and there must be minimal walking distances for staff, who must be able to monitor all the patients giving birth (head midwife, obstetricians, anaesthesiologists, etc). There must be workstations for staff as well as on-duty rest rooms for very busy periods. Finally, there must be a training delivery room in which staff can be trained in obstetric skills.

Outpatient facilities
Like the ward, the outpatient area is divided into a gynaecological unit and an obstetric unit. At the entrance to the outpatient area there must be a reception and waiting facilities. The area must have a location with easy access to doctors with other specialties, laboratories, etc. In addition, there must be workstations for others working in the department, including a dietician and a social worker.

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The outpatient area may be located together with the outpatient facilities of other specialties or in connection with the obstetric ward.

The gynaecological outpatient clinic performs examinations in connection with medical problems such as diabetes, cardiac disorders or pregnancy problems.

The main activities of the obstetric outpatient clinic is midwife consultations, medical examinations and scans of pregnant women. The clinic also evaluates discharged patients and their newborns within the first seven days after delivery. The clinic must have an ultrasound units, observation spaces for patients, and waiting and lounging areas for patients and relatives.

The fertility clinic treats ‘healthy’ couples within normal working hours. The clinic should be a united whole and should preferably be located close to the gynaecological outpatient clinic (but should not be part of it). A specialist laboratory for the cultivation of eggs under special conditions must be established.

Administrative facilities
Office space and conference facilities must be provided for the department's management, staff functions, doctors and other staff. There must be easy access from the offices to outpatient clinics or wards.

There must be staff room so flexible that it can serve as a venue for morning conferences, a lunchroom and an ordinary staff room. In addition, there must be kitchen facilities and staff toilets.

There must also be access to outdoor areas.

Research and training facilities
The department wishes to conduct research and develop new treatment methods for the benefit of gynaecological and obstetric patients.

For this reason, a research unit must be established in the department in the form of office space and other facilities for professors, PhD students, clinical assistants, researchers and others, all of whom should be located in a cluster, preferably close to the outpatient facilities.

A research laboratory with specialist equipment must be established in connection with the outpatient facilities, and the fertility clinic needs a laboratory for the cultivation of cells as well.

Furthermore, a relatively small training unit with a central location in the department must be established. It could, for example, be located next to the department's administrative facilities so that department staff in charge of education and training have offices next to the training facilities.

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DEPARTMENT I: INTENSIVE CARE

Outline of core functions
The Intensive Care Unit is a special function in the Department of Anaesthesiology that receives patients who need intensive care, stabilisation and monitoring. The patients are either inpatients transferred from another specialist department at the hospital or patients who come to the hospital via FAM. The Intensive Care Unit also perform the following patient-oriented core assignments: resuscitation calls, trauma calls, Mobile Acute Team, intensive attendance, and acute and elective DC cardioversion.

Vision
The vision is, once the department has moved into optimally designed intensive care facilities, to achieve the following qualitative and operational improvements:

- Rational and resource-efficient operations with optimal working procedures
- Optimal patient safety
- Optimal health and safety at work
- Optimal conditions for relatives
- Flexible future-proof facilities for all types of patients and their relatives, in particular paediatric patients and their relatives, bariatric patients and patients with a high transmission risk

Floor areas

Beds (20 one-bed rooms)	1,000 m^2
Offices, etc	400 m^2
Intensive Care Unit, total net floor area	1,400 m^2

Professional communities
The following departments and specialities are obvious collaborative partners: FAM, internal medicine, surgery, gastroenterology, gynaecology and obstetrics, urology, orthopaedic surgery, haematology, nephrology, oncology, endocrinology, pulmonary medicine, paediatrics and neuromedicine.

Wards

The Intensive Care Unit must function as a complete whole, but it would be a good idea to divide it into two units with ten patient rooms and a central monitoring area each. Visual contact between the patient rooms and the staff area/workstation is an absolute requirement.

When planning and designing the Intensive Care Unit, entrants are requested to endeavour to organise patient rooms in the same way everywhere to ensure maximum flexibility. The need for intensive care and intermediary places will always vary, just as the need for places for paediatric and bariatric patients and the need for isolation places will vary. A possibility of having two patients in the same room or of combining two patient rooms would add to the flexibility.

Bathrooms and toilets for all the patient rooms are not necessary. Two bathrooms and toilets would be enough. The patient rooms must be accessible to people with disabilities, and the layout and décor of the rooms must help create a calm environment around the patient.

It is therefore important that the layout of areas for the delivery/collection of goods, clothes, linen, utensils, etc for the patient rooms is such that only a minimum of disturbance will be caused. Ancillary rooms such as the equipment storeroom, the analysis laboratory and the medicine, utility, cleaning and waste rooms must have an optimal location relative to the patient rooms and the staff facilities.

At a central location in the unit, there must be a pneumatic post terminal for despatch of samples to the laboratory.

Administrative facilities
Workstations for nurses, secretaries and doctors for documentation and monitoring equipped with a wireless call system must be established. They may be laid out as two centrally located open areas with workstations, monitoring units and visual contact with patient rooms. Workstations and monitoring spaces may also be located immediately outside every second room with direct view into two rooms. In addition, there must be a number of separate offices, part-time workstations, meeting rooms for relatives and an on-duty rest room.

The department also needs a staff room so flexible that it can serve as a venue for morning conferences, a lunchroom and an ordinary staff room. There must also be kitchen facilities and staff toilets.

There must be access to outdoor areas.

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Research and training facilities
There must be a flexible conference and meeting room with seating for 35 people and equipment that makes the room suitable for both conference and teaching activities, just as it must be possible to use the room as a skills lab. Patient-related research relative to intensive care patients will take place in the patient rooms, while other research facilities are in the Department of Anaesthesiology.

ACUTE SURGERY AREA

Outline of core functions
On a general level, the various operations performed can be categorised as follows:

- Acute surgery, which – as indicated by the name – means acute procedures.
- Elective surgery, which means that the patients are admitted after prior examination and that surgery is planned in advance. The patients will subsequently be taken to a patient room.
- Same-day surgery, which means that admission, surgery and discharge of the patient take place on the same day.

The surgery area planned in the new building facilities will be considered an acute surgery area in which surgery will primarily be performed on patients who need speedy, unplanned surgical procedures. Acute patients will come to the surgery area from FAN, from the ward tower (Block 01) and from the wards in the new building facilities. The surgery area will be manned on a 24/7 basis.

The surgery area must also perform surgical procedures for units with wards in the new building facilities, ie the Gastro Unit and the Department of Gynaecology/Obstetrics.

Same-day surgery for the departments mentioned will take place on Level 04 in the existing treatment building (Block 5).

Vision
The vision is to obtain flexible, future-oriented facilities within the physical framework provided. The themes that should be in focus are optimal layout and organisation relative to the needs for acute and elective surgery. A well-structured division of the surgery area and 24-hour manning should ensure a rational operations organisation that can ensure accelerated and structured procedures.

The following principles govern work in the acute surgery area:

- Good patient pathways
- Family concept
- Attractive workplace
- Flexibility
- Operational optimisation
- Art (attractive setting)
- Hygiene

Families will to an increasing extent be involved whenever a surgical procedure is performed. The family concept means greater openness about admission and treatment, which results in certain requirements on the physical framework, within which there must be room for families. In this respect, Herlev Hospital wishes to be perceived as 'the forthcoming hospital'.

Operation rooms
Currently there are two surgical robots at Herlev Hospital. They are used by gynaecologists, urologists and gastroenterologists. Robot surgery is expected to develop continually, which will present challenges in the form of potential needs for larger operation rooms with sufficient space for various types of equipment in ancillary rooms.

All operation rooms should if possible have natural light and views of the outside.

Perioperative unit
In the perioperative unit, patients are monitored and treated before and after surgery, ie pre-operatively and post-operatively. This unit should be located as close as possible to the operation rooms. The area taken up by this unit must be part of the area set aside for operation rooms.

General flow
The acute surgery area must be located relatively close to FAM, where patients will initially be stabilised in a room for acute patients.

Facilities for perioperative activities, on the other hand, must be located as close as possible to the operating rooms. They will be staffed on a 24/7 basis. The C-section room must be directly connected with the delivery area, preferably next to the gynaecological operating rooms, just like the operating rooms of the Gastro Unit should preferably be located close to the Gastro Unit wards.

The wards of the Paediatric Department must be located close to (B) the acute surgery area, as a member of the department staff will always go with the patient to the surgery area and the perioperative unit, which is why long distances would be counterproductive.

Ancillary rooms and staff facilities (offices, conference rooms, retreat rooms, toilets, etc) must be located adjacent to the primary work area.

Entrants should note that the sterilisation unit in the service building (Block 7) is on Level 05, and that there will be transport activities between this unit and the acute surgery area.

Floor areas

Operating rooms (8), Gastro Unit	1,390 m^2
Operating rooms (7), Gynaecology	1,210 m^2
Operating room (1), Orthopaedic Surgery	200 m^2
Operating rooms (16), total net floor area	2,800 m^2

Administrative facilities
A multidisciplinary staff room with kitchen facilities that can serve both as a lunchroom and an ordinary staff room must be located in the department. There must also be a relaxation room that staff can use for 'powernapping'.

There must be access to green outdoor areas.

Research and training facilities
The following rooms for clinical training must be located close to the operating rooms:

- One room for open surgery training (multidisciplinary)
- One room for laparscopic surgery (multidisciplinary)

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SATELLITE FUNCTIONS

Floor areas

Treatment and training facilities	
Physiotherapy/occupational therapy	240 m^2
Offices, etc	60 m^2
Physiotherapy/occupational therapy, total net floor area	300 m^2
Sampling rooms, etc, Clinical Biochemistry	170 m^2
Offices, etc	80 m^2
Clinical Biochemistry, total net floor area	250 m^2

Physiotherapy/occupational therapy
This section is an outpatient facility under the physiotherapy and occupational therapy unit of the Department of Internal Medicine and is specially designed for patients in the Department of Gynaecology/Obstetrics and the Department of Paediatrics.

Entrance routes to the outpatient area must be very clear, and there must be a reception and a waiting area for patients and their relatives. Entrants are requested to consider whether this arrival area could be located adjacent to the other outpatient clinics in the new building facilities.

Outpatient clinics
The outpatient area must have testing and treatment rooms for children (4 rooms) and adults (2 rooms).

In addition, there must be a long corridor in the physiotherapy area in which children can be observed walking and running in connection with outpatient check-ups. There must be access to a testing/exercising room for older children, and to work-out equipment, treadmills and a basin.

Separate toilet and shower facilities must be established for children and adults respectively, preferably close to the exercise facilities. In addition, there must be storerooms for various assistive devices, instruments, etc.

Administrative facilities
Offices and conference rooms must be established for the department's staff, including rooms for conversations with patients and relatives. There must also be staff toilets and a staff room with a tea kitchen.

Clinical biochemistry
This satellite must be laid out as an outpatient facility for examination and blood sampling. It will provide services to the KBB functions, primarily patients from Gynaecology/Obstetrics and Paediatrics. The entrance route to the outpatient function must be clear, and it would be preferable if this satellite could share its waiting facilities with other outpatient clinics.

Outpatient unit
This unit must have separate examination and blood sampling room for adults and children. Rooms should be flexible so that the number and size of rooms can be changed. There must, however, be screens between bays. Examination rooms for children must have enough room to accommodate accompanying family members, and there must be special stress test rooms for women.

Administrative facilities
There must be offices and conference rooms for the department's staff, including a room for talks with patients and relatives. In addition there must be staff toilets and a staff room with a tea kitchen, as well as storerooms for assistive devices, instruments, etc. Furthermore, there must be an analysis laboratory with room for analysis apparatus, refrigerators for samples and PC workstations for registration and recording. A pneumatic post terminal must be located in the laboratory for the despatch of samples to the department of biochemistry, microbiology or immunology.

SHARED FACILITIES

Floor areas

Entrance and waiting areas	1,000 m^2
Staff changing rooms and lockers	800 m^2
Shared research, training and conference facilities	600 m^2
Shared staff facilities, total net floor area	1,400 m^2
Storerooms, housekeeping rooms	800 m^2
Logistics, workshops	400 m^2
Storerooms and workshops, total net floor area	1,200 m^2

Entrance areas and waiting areas
The new building facilities are expected to have a main entrance with a reception or information counter and a waiting area. It is up to the entrants to choose whether to have one or the other.

Shared staff facilities
Shared staff facilities comprise the following categories:

On-duty rest rooms
On-duty rest rooms for doctors, surgical staff and anaesthesia staff must be located in the new building facilities where staff can reach the surgery area, the acute admissions area and the C-section rooms close to the surgery area very quickly.

Exercise rooms
If it is possible to incorporate an exercise room within the above net floor area framework, it would be desirable to have such a room in order to live up to the vision of being a 'physically active hospital'.

Shared research and training facilities
The area for shared research and training facilities may be laid out in accordance with needs and requirements: shared conference and/or training facilities, etc for staff in the new buildings facilities, exercise rooms associated with the surgery area, etc.

Storerooms and workshops
These rooms must be connected with the functions described in the section entitled 'Logistics'.

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HEALING ARCHITECTURE AND ART

Architecture
'Healing architecture' is a design concept reflecting the philosophy that architecture can influence people's wellbeing and that, as a result, architecture can help enhance or speed up a healing process in individual patients. The fundamental philosophy is not that architecture alone can heal people, but that architectural design as expressed in the quality of light, the ambience in a room, colours, sound and the option of being private and secure can further both physical and mental healing.

Herlev Hospital finds it crucial to place sufficient emphasis on aesthetics and architecture in order to create a welcoming setting in which sensory experiences are real parameters. Consequently, entrants are requested to ensure that the new building facilities will provide opportunity for individual immersion and reflection. In particular, special attention should be paid to the design of outdoor areas with gardens, paved areas and terraces.

Planning, the location of healthcare stations, room for manoeuvring in both plan and section, and accessibility are factors that have a proven impact on the number of errors made and the level of safety provided in hospital environments. Attention will be paid to this fact in the future development of the project.

A Capital Region report on the principles governing Healing Architecture will be available in 2010. Entrants are expected to apply the principles set out in the report.

Art
Artistic decoration is an important parameter and a natural element in adding a general poetic touch to the architecture.

In the hospital context, art may be used as a positive distracting element, for example in connection with pain treatment, but is can also be conducive of generating wellbeing by stimulating people's senses, or it may serve as a mental diversion. Colours may be part of a work of art, and colour coding may be a work of art in its own right. Furthermore, works of art including installation art and colour coding may be important features of a wayfinding system.

The objective of the extension of Herlev Hospital is that art is integrated in the new facilities as it is in the existing buildings. The goal is not a copy of Poul Gernes' work but a new, contemporary style.

This approach is fully in line with the growing overlapping of art and architecture that is typical of our day and age, with art playing an increasing role. Art should therefore be an important element in architecture. Not in the form of paintings on the wall but rather as an integral element so that art is inherent in the spatial context both indoors and outdoors. Such an approach calls for close collaboration between artist and architect, also at an early stage of the design and planning process.

INTERNAL LOGISTICS

An automated transport system for clean and dirty materials as well as robot technology, electronic recognition systems and a pneumatic post system must be incorporated into the design of the new building facilities. General implementation of digital stock control and updating of existing transport systems are needed. Automated uniform dispensers are currently being installed at the hospital.

The Capital Region has decided to set up a central regional warehouse (outside Herlev Hospital) that can deliver pre-packed goods to the hospitals in the region. The service building will have a manned goods reception unit. In addition, an unmanned 'gate' for receipt and distribution of goods using automatic guided vehicles (AGVs) must be established in KBB and FAM.

Sterilisation unit
Sterilised products will continue to be treated in the service building (Block 7), albeit in a new production line based on the case card principle, ie packages for specific types of surgical procedures. The objective is to improve both efficiency and quality, to enhance the security of supply and to ensure increased flexibility relative to users and operating rooms. Deliveries to the acute units in KBB will take place using AGVs following fast tracks.

Handling of medicine
Centralised dispensing of medicine, unit dosing, is expected to be established either at the central hospital pharmacy of the Capital Region or at some strategic location in the existing Herlev Hospital building complex. Electronically ordered medicine for individual patients may be packed centrally and distributed directly to each department. Such distribution is likely to be by pneumatic post with electronic recognition codes sent from the goods delivery area or from the hospital's dispensing centre.

Utensils
Utensils are delivered from the service buildings and/or in packages from a central regional warehouse.

Samples
The plan is to use a pneumatic post system to bring samples to the laboratories in the treatment building (Level 4 in Block 5) or to the laboratories in the service building.

Beds
As now, beds will be cleaned and prepared in the service building (Block 7), but an automated washing system will be established. Beds will be brought to the new buildings and back through a system of tunnels (about 130 beds a day).

The plan is that clean and dirty beds will be transported to the bed preparation unit by the current conveyor system, which will be extended in the basement (already prepared in existing buildings) and go through a new tunnel to the new building facilities. The current production system has sufficient capacity. A central buffer storeroom area is needed in the new building facilities, especially for clean beds.

Linen and laundry
Linen, prepacked for individual departments, will be supplied on the basis of electronic orders. Clean linen will be transported to the departments by AGVs from the unmanned goods deliveries unit.

Dirty linen will be returned from the departments by AGVs to the unmanned goods deliveries unit, from where the linen supplier will take it to a laundry.

Food
Herlev Hospital will continue to have a single central large-scale food production unit. The current central kitchen in the service building (Block 7) has sufficient capacity to manage production after the future increase in activities at the hospital. Transport is to take place through the existing/extended system of tunnels.

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The central kitchen will deliver buffet trolleys with hot and cold food to all hospital wards, including wards in the new building facilities, on the basis of orders. The central kitchen will also supply hot food and semi-prepared food for the central canteen and any future local canteens/staff rooms, as well as cold food for preparation in the canteen kitchen.

Food is currently also delivered to the patient hotel in the same way as food delivered to the wards, but the future patient hotel must have a restaurant unit of its own.

Easy, logical transport routes, prepared for AGVs, between the central kitchen and buffet areas in wards and canteens must be given high priority.

Waste handling
The general principles for future handling of waste should ensure only a minimum of manual handling of waste. When designing the new building facilities, entrants are requested to consider the use of waste chutes, waste suction systems and automatic transport of waste to the central recycling and waste station to the north of the service building.

Waste will be sorted into the following waste categories:

Ordinary daily waste, hospital waste/hazardous waste, chemical waste, paper and cardboard, confidential documents, ink ribbons and cartridges, electronic waste, metal waste, scrapped fluorescent tubes, glass and garden waste.

Waste must insofar as possible be sorted in the individual departments. The final sorting will take place at the skip station at the service building. Hazardous waste will be stored in a separate room until collected.

STRUCTURES

In principle, no specific requirements apply to the structural design of the new building facilities, so it is up to entrants to propose relevant structural principles.

Entries must explain the principles proposed for load-bearing structures, and a motivation for the choice must be given. It is important that the structures chosen will provide the greatest possible level of flexibility so as to facilitate future changes to the organisation of spaces.

Entrants must describe the implications of the location of helipad for the load-bearing structures if the helipad is proposed on top of structures rather than on the ground.

Entrants are advised to use the existing tunnel system for transport between existing and new buildings.

Geotechnical surveys have been made in relation to the building zone that is the subject of this competition. The surveys provide general insight into soil conditions at the hospital site. The geotechnical report is one of the annexes to this competition brief.

INSTALLATIONS

The current central installation system will not be sufficient following a major extension of the hospital so entrants have to take into account that separate installation systems must be established for the new building facilities.

The hospital has not defined any specific requirements as to the types of installations to be used or the main principles to govern the future technical installations.

It will thus be up to entrants to present proposals for general installation principles, duct trajectories, cableways, etc. The proposed solutions should be based on operational conditions, including product and system lifetime, energy consumption, indoor climate, service friendliness and health-related aspects, for example hot utility water.

The design of the technical installations in the future building facilities must take the following aspects into consideration:

- Current utility situation
- Focus on operationally optimal, flexible and sustainable solutions and achievement of conditions that are optimal from a health point of view.
- The budgetary framework

The above applies to electricity, water, heating, low voltage power, ventilation, drainage, sanitary installations, central monitoring and control (CTS) systems and medical gases.

All future installations should be easily accessible for maintenance, and there must be sufficient space for replacement and extension. In particular, entrants are requested to take into consideration that maintenance, replacement and relocation should be possible without disrupting operations and disturbing patients in the premises concerned.

The installations should be located next to the active rooms and where there is easy access to them for maintenance purposes. There should be ample space above ceilings and possibly a separate installation level above spaces requiring many installations. This means that flexibility is key. Finally, access to and connections between buildings are important in order to ensure optimal maintenance and operations.

In order to ensure security of supply and patient safety, it is crucial that entrants take the need to be able to connect the new installations with already existing installations into account in the planning of the new installations, so that the various installations can supply each other, thus providing the necessary back-up. A specific requirement is that only acid-proof stainless steel pipes with long durability be used.

The handling of wastewater must be included in an assessment of sustainability, in connection with which one point to be considered is whether some of the grey water can be reused. Requirements applying to separation and collection must be set out in a forward-looking plan and strategy.

UTILITY SERVICES

When the current hospital complex was planned and designed, no future additional buildings were taken into account in relation to utilities

In connection with the new building facilities, new pipes and ducts must therefore be connected with the (public) mains. The utilities situation must be assessed, and installations must be prepared for the extensions set out in the masterplan but will not be put into use until after Stage One.

Electricity

The hospital is of the opinion that the three current cables will be enough to supply the hospital with power up to a point of a 50% extension of the current hospital complex.

The high-voltage supply is currently being upgraded and a high voltage ring main unit is planned. Local sub-stations will be used, and a UPS system is planned so that all power sockets will be provided with standby power in the future.

Installations must be earthed and shielded.

It was recently decided to establish a standby power system at the hospital site. Information about wishes and requirements relative to this system is given in connection with the description of the individual units in the section entitled ‘Masterplan’ on pages 46-51 of this competition brief. Once a new standby power system has been connected to the high-voltage mains, all electrical installations at the hospital will have standby power. It will therefore not be necessary to install special standby power sockets in the new building facilities.

Water

The local authorities in Herlev have stated that there is sufficient water supply capacity for the planned extension, one reason being that over the past ten years the hospital has reduced its consumption of water by about 25%.

New branch water pipes will require new connections to the water company’s mains.

Whenever a new water supply pipe is established, it must be connected to the current annular connection so as to ensure the greatest possible security of supply. When determining the dimensions of such pipes, entrants must take into account that there must be full supply of water even if one of branch water pipes is out of function (or taken out of service).

Sewers
Sewerage conditions need to be investigated further, and entrants must expect several fractions to be required, which will be set out in local authority regulations.

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The local authority in Herlev has stated that it is possible to handle an increased volume of wastewater, but it is not possible to drain any additional rainwater in excess of the currently permitted maximum volume.

Heating
The Vestforbrænding incineration plant and Herlev Hospital are currently discussing the establishment of a new district heating pipe. The pipe must connect the southernmost point of the site with the north-western corner, but the final trajectory will not be decided until the location of the new building facilities has been determined.

In that connection it must be assessed whether the new pipe is to replace the current pipe or whether it should be a supplement to it so as to ensure a higher level of security of supply and it will be possible to carry out repair work without having to disrupt the supply of heating completely.

The actual heating system/room heating should be provided via a low-temperature district heating system using convectors for room heating.

Cooling
The hospital's cooing system must be connected to a central cooling plant. A ring pipe is currently being planned, and groundwater cooling is being considered. Cooling plants for special functions and facilities must be established locally in the technical areas of the new building facilities.

Ventilation
A low-pressure system with optimal heat recuperation is requested.

Sprinklers
Sprinklers may be connected to the existing sprinkler supply system in Block 1.

Gases
The supply pipes for medical gases must be connected with the new facilities.

SUSTAINABIILITY

The proposal for a masterplan for and extension of Herlev Hospital must live up to the intentions set out in the Capital Region's strategy and the sustainable design guidelines formulated. Herlev Hospital expects to receive ambitious and realistic proposals and would like entrants to focus on the following sustainable aspects in their design:

Flexibility
A flexible building concept must be given high priority. The new building facilities must be able to accommodate the constant changes of routines, new treatment methods, new diseases and new technology that are characteristic for the healthcare area, and must thus be a sustainable investment.

Carbon emissions
The reduction of carbon emissions in relation to energy consumption, heating, ventilation and cooling must also be given high priority. The design must be such that, later on, the building facilities can become carbon-neutral and be categorised as Class 1. Entrants are requested to present innovative solutions and methods for reduction of energy consumption, recuperation and possibly own production of energy. Furthermore, entrants should prioritise the use of materials and products that cause the lowest possible carbon emissions in production and transport, and finally the traffic and logistics solutions proposed must be based on principles of sustainability.

Materials
Long-durability materials that can be reused and which age in an attractive manner must be used. Furthermore, the materials used must be products with low VOC emissions, ie provided with the Danish Indoor Climate Label (DMI).

Environmentally damaging substances
Prevention of future discharge of and emissions from environmentally damaging substances must be taken into account in the design. No environmentally damaging substances, including substances on the list of undesirable substances issued by the Danish Ministry of the Environment, must be used in building materials, products and equipment. This includes the use of ozone-depleting substances in installations. Furthermore, the quantities of environmentally hazardous waste in the construction phase must be minimised.

Raw materials
The use of scarce raw materials must be limited, which means that products and materials containing scarce raw materials should not be used. Sustainable solutions must be used in the landscaping of the site, particularly in terms of the removal of earth and the natural seepage of rainwater.

ACCESSIBILITY
Entrants are requested to ensure equal accessibility for people with mobility problems; see Danish Standard DS 3028, “Accessibility for Everyone”.

NEW BUILDING FACILITIES: FOUR SELECTED AREAS

DETAILS OF SELECTED AREAS

Based on the concept proposed for the FAM and KBB facilities and the above description of the various departments, entrants are requested to illustrate the following four selected areas in greater detail:

- *Main entrance*
  The proposal must show how arrival to the hospital will take place and illustrate the routes from the entrance to the existing buildings and the new building facilities, including the entrance to FAM.

- *Reception in FAM*
  Entries must show the layout of a delivery area in which the delivery room is combined with lounges and ancillary rooms in a way that forms a well-functioning rational whole.

- *Wards in the Gastro Unit*
  Entries must illustrate the layout of a ward in the Gastro Unit, seen in relation to the location of the workstations of nursing staff.

MAIN ENTRANCE

The current main entrance to the hospital leads to a lobby with a reception. From the lobby, there is access to a cafeteria, shops, the ward tower, etc.

In connection with the establishment of the KBB and FAM facilities, a separate entrance to FAM must be established. Entrants are also requested to consider how access to current and new buildings should take place:

- Is the current main entrance to be maintained as the shared entrance to the hospital?

- Is the current main entrance to be supplemented by a new entrance to the new building facilities (in addition to the separate entrance to FAM)?

- Is a new shared main entrance to the hospital to be established as a replacement of the current main entrance?

The solution chosen should be related to the overall layout and organisation of access conditions for vehicles and pedestrians set out in the masterplan, but will also depend on the plan arrangement proposed for the new building facilities.

The objective is to achieve a solution that will provide well-arranged arrival and exit conditions and make it completely clear where people are to go.

The main entrance must be clearly marked on the facade. On the inside, in the immediate vicinity of the main entrance, there must be a reception desk manned on a 24/7 basis that patients and visitors can contact for information.

Different types of waiting areas must be established close to the reception desk. The entrance area must be friendly and accommodating and feature access to baby changing facilities, toilets, cloakrooms, etc. Preferably, there should also be service facilities such as a kiosk and a café.

Entries must illustrate the layout and organisation of the main entrance area including reception, waiting areas, café, kiosk/shops, etc, as well as the connection between the current and the new hospital facilities.

RECEPTION IN FAM

All acutely ill or injured patients and their relatives, be they referred to the hospital or self-referring patients, will arrive at the FAM reception area trough the same entrance.

However, patients arriving by ambulance or helicopter will be received in a special screened-off area adjacent the trauma rooms and treatment rooms.

The patients will be received and registered at the reception in the admissions area. In the triage area, the patients will be prioritised and sent to the various treatments tracks or to different waiting areas.

It must be possible quickly to send children and their relatives to the child reception area or to a special waiting area for children. This waiting area environment must cater to children's need for distraction (PCs, TV) and must be conducive to reducing fear and tension for the children and protecting them from frightening experiences.

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Waiting areas must generally be friendly and welcoming, featuring a café and kiosk environment that is laid out in such a way that all those waiting in the area can be monitored by relevant professional staff.

Proposals for the FAM reception area must illustrate the layout and organisation of the arrival area, including the location of entrances, the reception desk, the triage function, connections and various types of waiting areas.

DELIVERY AREA

A general description of the delivery area is given on page 75. Entrants are requested, on the basis of their general proposals, to provide details showing how a delivery room combined with lounges can make up a well-functioning rational unit for ambulatory delivery and care.

Women who have given birth before and whose pregnancy is without complications are now offered to deliver their child on an ambulatory basis, which means that the family can go home within four to eight hours after the baby was born. It is important the families are given a good, calm start on their life with the new child, especially because they have to take care of the newborn baby on their own relatively quickly. One good way of ensuring such a calm start is not to move the family after delivery.

It is thus desirable to be able to offer families a coherent pathway within the framework of the delivery suite. For example, the woman may use the lounge while she is in labour, go to the delivery room to give birth and return to the lounge and stay there for some hours after delivery. This would give families an undisturbed 'base' from they arrive to they leave, and older siblings can be present without seeing the actual delivery.

The lounge should be big enough to accommodate both parents and possibly older siblings. There must be facilities in the lounge that the family can use to prepare light meals, and there must be a bathroom with a tub that the family can use before, during and after delivery.

The bathroom and the delivery room must be separate so that the delivery room can be cleaned and prepared quickly after each delivery.

WARDS IN THE GASTRO UNIT

Entrants are requested, on the basis of their proposals for the overall layout and organisation of the new building facilities to prepare a proposal for the layout and organisation of a ward in the Gastro Unit. The proposal must illustrate how many one-bed patient bedrooms can be provided in a single standard ward unit and how they are located relative to staff workstations.

In the Capital Region, only one-bed patient bedrooms are established in new building facilities. They must all have an ensuite bath/toilet and sufficient space to allow a relative to stay overnight in an extra bed. The ward proposed must be such that it can be used everywhere in the new building facilities.

Entrants are requested to place emphasis on ease of overview, closeness and short distances that will help optimise the costs of operation.

Entries must indicate distances to utility rooms and linen rooms relative to the patient bedrooms. Workstations must have PC working areas.

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METHOD AND ORGANISATION

Method / process
(The maximum length of the method description is ten A4 pages).

The tender must include a description of how the entrant anticipates to realise the proposal on the basis of the conditions and requirements set out in the competition material, including the description of the client organisation.

Entrants are requested to describe the following aspects:

- Time management: Compliance with time schedules and appropriate handling of potential delays.
- Financial overview and compliance with budgets in all phases: Constant overview of estimated costs associated with the realisation of the project.
- Overall cost, operation and maintenance perspective: How the consultant at all times will ensure that there is a focus on the operating costs resulting from the proposed solutions.
- Change management: It will become necessary to make changes or adjustments to the project in the course of the realisation phases. How will this be handled in the process?
- Risk management
- Collaboration and conflict management.

Organisation
(The maximum length of the description of the organisation is ten A4 pages. The maximum length of each CV included is three pages).

Entrants are requested to describe how responsibilities and assignments are to be distributed in the organisation and how they suggest internal collaboration should be organised).

Internal communication channels as well as the intended contact with the client and the client's user organisation should also be described.

Furthermore, entrants are requested to describe how the participating firms will collaborate and to specify which services will be provided by the individual firms in the programming, design and execution phases.

Entrants must also explain the distribution of resources between the various consultants in the team of consultants, for example in the form of a resource distribution table with indication of the percentages of services to be provided by each individual consultant.

Moreover, as a minimum, CVs for key members of staff assigned to the project must be submitted. Such key members of staff include the following people:

- Project manager
- Design manager
- Project architect
- Project/coordinating engineer
- Project landscape architect
- Manager in charge of the integration of art

COST ESTIMATE

Entrants are requested to prepare a cost estimate for the scheme they propose. This estimate must substantiate that the proposed scheme can be realised within the budgetary framework that applies to the project.

The cost estimate must comprise Stage One of the masterplan and the new building facilities for FAM and KBB, as set out in 2.1 and 2.2 of this competition brief.

Once the winning entry has been selected, budgets will be laid down for building works and for landscaping/earthworks.

In order to ensure uniform assessment of construction and operating costs, entrants must use the predefined breakdown of costs shown on the following page.

CONSTRUCTION COSTS

0	CONTRACTORS' COSTS		Unit	Quantity	Price
	KBB and FAM				
	Site preparation	Eng	m^2	51,900	
	Load-bearing structures	Eng	m^2	51,900	
	Architectural work	Arch	m^2	51,900	
	Facades (number of $m^{2)}$	Arch + Eng	m^2		
	Installations, electrical	Eng	$m^{2\$}$	51,900	
	Installations, HVAC	Eng	m^2	51,900	
	Fixtures and fittings	Arch + Eng	m^2	51,900	
1	Sub-total		m^2	51,900	
	Parking inside building structures				
	Site preparation	Eng	m^2		
	Load-bearing structures	Eng	m^2		
	Architectural work	Arch	m^2		
	Installations, electrical and HVAC	Eng	m^2		
2	Sub-total		m^2		
	Landscaping / earthworks				
	Earthworks				
	Hard surfacing				
	Green areas				
3	Sub-total				
4	**Site installation costs**		Total		
	Art				
	Buildings		m^2		
	Landscape				
5	Sub-total				
	PROJECT COSTS				
	Architect, engineer, geotechnical surveys		As stated in tender		
	Note: Estimated share of the fee tendered spent on equipment and furniture to be deducted				
	Outlays budget				
6	Sub-total				
	RESERVES				
	(15% of items 1+2+3+4+5+6)		%	15	
	TOTAL			Max	**1,332,000,000**

TENDER FOR CONSULTANCY SERVICES

In the competition phase, entrants must prepare proposals in accordance with the specifications and requirements set out elsewhere in this competition brief.

In addition to the preparation of proposals, entrants must submit a fee tender for the consultancy services about which an agreement is likely to be made with the winning entrant after the conclusion of the competition.

The tender must be given by (anonymous) completion of the enclosed tendering list and must be based on the complete competition material.

Entrants must state a fixed price for programming, design and planning, project follow-up and site supervision and for consultancy services in connection with the commissioning of the buildings and the one-year inspection (item 1.1 of the tendering list).

The consultancy services will comprise all architectural and engineering services, design management, landscape architecture services, advice concerning fixtures, fittings and equipment, and advice concerning the integration of art into the building design.

The consultancy services will concern FAM, KBB, parking inside building structures and landscape works (including roads, paths, etc) relative to Stage One of the masterplan.

Item 1.2 of the tendering list must be completed with tendered hourly rates for the staff categories indicated in the design phase and in the execution phase. These hourly rates will be used in connection with any additional services that are to be paid on a time basis.

The services to be provided by the lead consultant are specified in the description of services in the competition material and appurtenant annexes (enclosed), and the terms and conditions of the agreement are set out in the draft agreement that forms part of the competition material (enclosed).

Entrants should note that Herlev Hospital intends to invite tenders for client adviser services relative to the project at such a time that the client adviser will become involved in the project no later than the date on which the lead consultancy agreement is signed.

Finally, entrants should note that the client intends to invite separate tenders for construction management. The construction manager will have a coordinating function no matter whether the construction work is to be carried out under single-trade contracts or combined contracts or under a main contract. The construction manager will also coordinate project follow-up and site supervision with regard to contracts, which is why a fixed price must be tendered for the services provided by the lead consultant as well.

This means that the interfaces of the project services ad a whole could be listed under the headings set out in the diagram below.

CLIENT ORGANISATION
NYBYG

CLIENT'S ADVISER
(control and coordination)

LEAD CONSULTANT
Design management
(architects, engineers,
landscape and art)

CONSTRUCTION MANAGEMENT

INTERFACES, CONSULTANCY SERVICES
Responsibility/agreement
Coordination/management

REALISATION

BUDGET, TIME, ORGANISATION

BUDGET

The total budget for the masterplan including the works listed on page 45 is estimated at DKK 4.2 billion exclusive of VAT.

The budget for the parts of the plan for which a tentative funding commitment has been given amounts to DKK 2.25 billion exclusive of VAT. This amount constitutes the total budgetary framework, ie all project, consultancy and construction costs as well as the cost of equipment.

The total budget for the part of the pre-approved project for which lead consultancy services are to be provided through the design competition is DKK 1.6 billion exclusive of VAT. This amount comprises the General Admissions Unit (FAM) and the Woman/Child Building (KBB) with appurtenant equipment, as well as parking facilities inside building structures and landscaping works.

When preparing their entries, entrants should bear in mind that it is an indispensable requirement that they substantiate that the proposal illustrated can be realised within the budgetary framework set aside for the project.

The following sections provide further information on the budgetary framework applying to the consultancy services, the reserves set aside in the budget, and the distribution of budgetary responsibilities among the consultants.

BUDGETARY FRAMEWORK FOR THE ASSIGNMENT

All costs relating to the realisation of the project are contained in the budgetary framework below.

The amounts stated in the budget are based on the 2009 price and wage index issued by the Danish Ministry of Finance and will be adjusted in accordance with this index.

The following expenses/costs set out in items 1 to 4 of the table are included in the main items of the budget:

- All contractors' costs.
- All costs incurred for the operation and maintenance of the building site, including use of electricity, water, heating, etc in connection with work carried out at the site, and the cost of winter protection measures.
- All costs of fixtures, fittings and signage.
- All costs relating to the work of architect, engineer and landscape architect in relation to programming, design, design management, site supervision, project follow-up, advice concerning commissioning and operations, and one-year inspection (by the lead consultant).
- All costs incurred in relation to geotechnical surveys, land surveying and possibly specialist consultants.
- All expenses relating to the reproduction of drawings, descriptions, notes, etc.

BUDGETARY FRAMEWORK

Item	Total budget
1. FAM + KBB	
2. Parking inside building structures	
3. Landscaping/earthworks	
4. Art (defined as 1% of total construction costs)	
Sub-total	1,332
5. Medico-technical equipment	191
6. Client costs (client's adviser, construction management, insurance, permits, charges)	60
Total (DKK million)	1,583

The costs incurred by the client for client adviser services and construction management as well as costs pertaining to insurance, building permits and connection to utilities are not included in the amounts stated but included in item 6, 'Client's costs'. Client adviser services and construction management services will be subject to a separate call for tenders.

In addition, budgetary reserves are included to cover contingencies and risk events that may occur. Further specification is given below.

For item 5 in the table, 'Medio-technical equipment', a total amount has been set aside for the purchase of all non-fixed furniture and equipment, technical equipment and medico-technical equipment. This budgetary amount comprises consultancy services, project costs and the cost of purchasing and installing the equipment, furniture, etc.

Entrants should also note that, outside the budgetary items stated, amounting to approximately DKK 1.6 billion, budgetary amounts have been set aside for the extension to the service building and the chapel, the installation of a stand-by power system, the establishment of a ground cooling system, etc.

BUDGETARY RESERVES

The budgetary amounts stated include amounts set aside for the following:

Construction risk
An amount has been set aside to cover any additional payment requests from contractors resulting from unclear points in the complex of contracts. The construction risk can only be invoked in the actual construction phase.

Contracting risk
An amount has been set aside to cover any fluctuations in market prices at the time of tendering resulting from an economic boom, overheating of the economy, etc. The contracting risk can only be invoked in the actual contracting phase.

Unforeseeable events
An amount has been set aside to cover unforeseeable events that the consultants, construction management, etc could or should not have foreseen. The amount can be invoked throughout the project period, which is the reason why the percentage declines as the project progresses, the reason being that the parties involved are expected to build up knowledge.

BUDGETARY FRAMEWORK: RESERVES

Milestones	Execution risk	Contracting risk	Unforeseeable events	Total reserves
Building programme	3 %	3 %	9 %	15 %
Conceptual design	3 %	3 %	8 %	14 %
Preliminary design	3 %	3 %	7 %	13 %
Detailed design	3 %	3 %	5 %	11 %
(After) contracting	3 %	0 %	5 %	8 %

The above table, which is broken down into individual phases, states the risk percentages that must be taken into account in the lead consultant's estimate of the cost of the individual project phases. When the lead consultant presents a cost estimate at the end of each phase, it must include the reserve percentage stated in the right-hand column of the table.

For example, at the end of the preliminary design phase, the estimate must include a reserve equalling 13% of the total construction cost amount.

BUDGETARY RESPONSIBILITIES

The lead consultant will in principle be in charge of managing budgetary matters and will have budget responsibility for the service included in the lead consultancy assignment. This basically includes all contractors' costs, site installation and operating costs, and the cost of fixtures, fitting, signage, etc, and applies to all four main budgetary items: FAM plus KBB, parking inside building structures, landscaping/earthworks and art.

The lead consultant will be in charge of coordinating the management of the budget and must report to the client or the client adviser.

The intention is to make the selected client adviser responsible for the management of the other budgetary items, which can be categorised as 'project costs'.

As regards 'Medico-technical equipment', it has not yet been finally determined who will manage and be responsible for this budgetary item. This will be finally determined in the programming phase. However, the point of departure is that the assignment interface description set out in 2.1.3 of the description of services will be used. In that section, the various areas of responsibility in the field of 'medico-technical equipment' are stated and examples of fixed/non-fixed equipment, technical equipment and medico-technical equipment are given.

On this basis, the client or the client adviser will be responsible for the budget for the purchase and supply of 'non-fixed equipment' and 'medico-technical equipment', while the lead consultant will be responsible for the budget for the incorporation of non-fixed equipment, medico-technical equipment and technical equipment.

ASSESSMENT OF TOTAL COSTS ESTIMATED BY ENTRANTS

In connection with the assessment of the entries submitted in this design competition, the cost aspects will also be assessed in order to check whether the various proposals can be realised within the budgetary framework applying to the project.

Entrants should note that the predefined breakdown of costs intended for use in the preparation of cost estimates (see page 93) will be used to check the likelihood of compliance with the budgetary framework.

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TIME FRAME

The following overall time schedule has been set out for the project:

Selection of winning entrant	April 2011
Signing of contract/approval	April-May 2011

The subsequent project milestones are as follows:

Programming	June 2011 – January 2012
Design	March 2012 – December 2013
Tendering and conclusion of contract	January – March 2014
Construction	May 2014 – June 2017
Hand-over and initial use	July – September 2017
Commissioning	October 2017

In connection with the performance of the work relating to the assignment, the lead consultant together with the client and the client adviser must prepare a detailed time schedule within the framework of the above milestone periods.

The lead consultant will be responsible for ensuring that the consultancy services agreed will be provided within the time frames set out and in accordance with the detailed time schedule that will subsequently be prepared as stated above.

In the detailed time schedule, time must be set aside in each phase of the consultancy period for the client's approval of the programme, outline proposal, preliminary design and detailed design respectively. In principle, the following periods must be set aside for approval of the individual consultancy phases:

Approval of winning entry and conclusion of contract	8 weeks
Programming	3 months
Outline proposal	4 weeks
Draft proposal	4 weeks
Preliminary design	Project processing period needed by the public authorities to approve the design
Detailed design	8 weeks

ORGANISATION

CLIENT ORGANISATION

Herlev Hospital's building and construction department, Nybyg, acts as the client's representative in connection with the realisation of the project.

Nybyg is an organisation comprising architects, engineers and planners. This organisation will be extended concurrently with the progress of the project so that it will have all necessary competencies in the fields of construction expertise, technical expertise, planning expertise and cost calculation and financial expertise.

Nybyg's primary responsibilities will be:

- To perform controlling activities (costs, time, quality and project risks).
- To ensure that the project is realised with due consideration of the Budget appropriations available.
- To ensure that the client makes decisions that are timely in terms of ensuring the progress of the project.
- To promote good collaboration between the external project parties and the hospital's internal organisation, thus ensuring relevant involvement of users.
- To communicate with public authorities.
- To act as client and contractual party in relation to all external project partners (client adviser, lead consultant and contractors).

In the project period, a number of project groups headed by Nybyg will be set up to deal with various themes. Likewise, a number of user groups will be established, in which the relevant hospital departments will be represented. Employee representatives will be involved to a great extent.

Groups will be established to ensure user involvement in the following areas:

- Acute Admissions Unit
- Gastro Unit
- Paediatric Department
- Department of Gynaecology/Obstetrics
- Department of Anaesthesiology
- Clinical biochemistry Department
- Physiotherapy and Occupational Therapy
- Department of Radiology
- Internal Services and Logistics
- Building and Technology Department

In addition to these user groups there are a number of service units at Herlev Hospital that must be involved in the planning of a number of logistic functions. They include the following department:

- Technical Department
- Medico-technical Department
- Housekeeping Department
- Supply and Transport Department
- Infection Control Committee
- Health and Safety Team
- Information Technology Department
- Patient Safety Unit

Nybyg reports to the Building Management Group at Herlev Hospital, whose members are the hospital management and employee representatives.

The Building Management Group reports to the Regional building management group, the Construction Steering Group, which includes representatives of the Capital Region's corporate management and makes the recommendations for final approvals in the Regional Council.

EXTERNAL PROJECT PARTIES

Client adviser
Before the assessment of the entries submitted in the design competition, Nybyg will appoint a client adviser to assist the hospital's client organisation in the programming, design, construction and commissioning phases.

The client adviser will represent the client in relation to the client's general management and coordination obligations vis-à-vis the various parties involved, which includes ensuring that the contractual parties (lead consultant, contractors, client and others) will meet their contractual obligations and ensuring due diligence in connection with decisions and various measures taken.

The user-related work will be planned by Nybyg and the client adviser in consultation with the lead consultant. The client adviser will coordinate and manage the general user involvement process.

Lead consultant
The lead consultant must provide all architectural, engineering, landscape design and art-related services from the time of the programming up to the commissioning and the subsequent one-year inspection. This includes design management and advice on equipment. Construction management is not part of the services to be provided by the lead consultant, as the client intends to call in separate tenders for construction management services.

The lead consultant must carry out the main part of the user-related work, including participation in all meetings with users in the programming and design phases.

The client has defined the following division of responsibilities for user-related work:

Client
The client will be responsible for the content of the statements and information provided by users and for the conclusions about user-related issues made at meetings with users.

Client adviser
The client adviser will be responsible for ensuring a smooth process, including compliance with the overall time schedule.

Lead consultant
The lead consultant will be responsible for translating user statements and input given at meetings with users into built facilities within the framework of the project. It will also be the responsibility of the lead consultant to ensure clarity about all user-related matters that are relevant to the project. In the first phase, the lead consultant must prepare a building programme on the basis of the competition entry and user input. The building programme will be used in connection with the application for a final commitment to provide funding for the extension project as a whole.

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<table>
<tr><td>Regional Council</td><td></td><td></td><td></td><td rowspan="8">ORGANISATION

Responsibility/agreement
Coordination/management
Dialogue/communication</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Central Steering Group</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Building Steering Group</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Client Department
NYBYG</td><td></td><td>Client adviser
(management and coordination)</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="8">User groups
Acute Admissions
Gastro Unit
Paediatrics Department
Gyn/Obs Department
Dept of Anaesthesiology
Clinical Biochemistry Department
Physio- and Occupational Therapy
Department of Radiology
Internal Services and Logistics
Building and Technology Dept</td><td rowspan="8"></td><td>Lead consultant
Design management
(architects, engineers, landscape and art)</td><td rowspan="8"></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Construction management</td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td>Contractor</td><td>Contractor</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Subcontractor</td><td>Subcontractor</td></tr>
</table>

Construction phase/construction management

The client expects that an 'independent construction management' organisation will be appointed in connection with the construction phase. This construction management will manage and coordinate all aspects relating to the various contracts and will act as coordinator relative to the lead consultant's site supervision and project follow-up in relation to contractors.

Consequently, the type of services to be provided by the lead consultant in the construction phase, ie site supervision and project follow-up, will depend on the contract form chosen.

Contracts will be single-trade contracts, combined contracts or a main contract.

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COMPETITION REGULATIONS [NOT TRANSLATED]