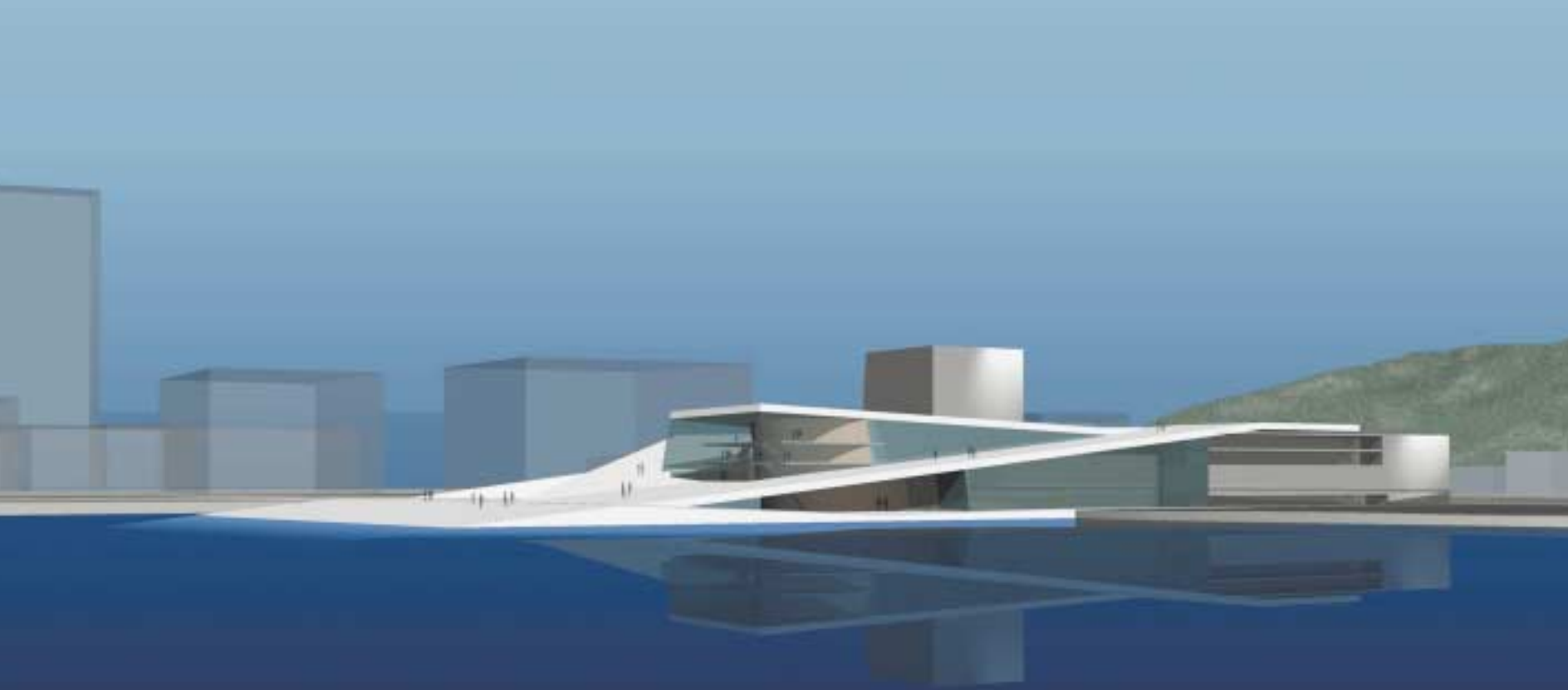


NEW OPERA HOUSE

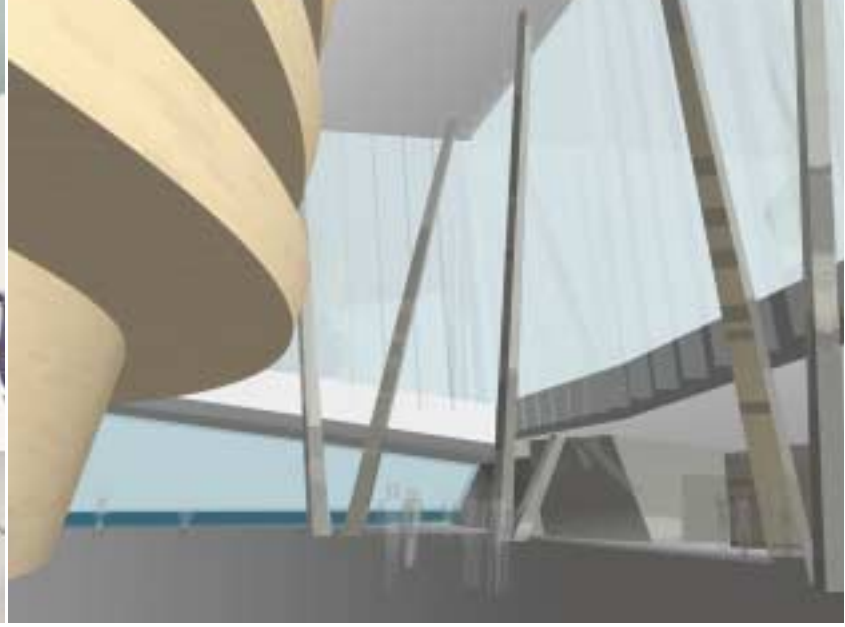
Foyer
Main Audutorium
Flytower with understage areas
Production Area

"The building shall stand as a representative institution presenting both Norway's cultural traditions and the Norweigian National Opera and Ballet's significance in the nation's culture and society."

Government proposal to Parliament number 48 (2001-2002)

ESSENTIAL NUMBERS OF THE NEW OPERA HOUSE

GROSS AREA:	38.500	m^2
PUBLIC AREAS:	11.200	m^2
STAGE AREAS:	8.200	m^2
REHEARSAL ROOMS, WORKSHOPS, ADMIN.	19.100	m^2
GROUND PLAN FOOTPRINT	15.590	m^2
LENGTH, INCLUDING PLAZA	242	m
LENGTH OF BUILDING:	207	m
WIDTH OF BUILDING:	110	m
SEATS IN LARGE AUDITORIUM:	1.350	
SEATS IN SMALL AUDITORIUM:	400	
HEIGHT OF FLY TOWER:	54	m
DEPTH OF STAGE BELOW SEA LEVEL:	16	m
BUDGET (PER 15.01.02)	2.830	mill NOK



THE OPERA

The new opera will have nearly 1000 rooms and will be the workplace for over 600 people divided into more than 50 groups. The building is composed of three main elements:

”Front of House” –The public areas are located in the building’s western section, with access from the areas nearby the city’s central train station. These include the main foyer, a large performance auditorium with 1350 seats and a small auditorium with 400 seats. The large auditorium is designed in “classical” form with a horseshoe type plan and a high ceiling height, providing high quality natural acoustics and good sight lines to the stage. In addition to the main stage there are also an under stage complete with elevator, side stages, back stages and a back side stage that can be used as a choir rehearsal room accessible to the public, and orchestra rehersal room.

The small auditorium will have considerable flexibility not only for the stage arrangements but also for the seating areas and acoustics. The foyer will be a grand, open room with a variety of lighting conditions and views to the surroundings. The space will be characterised by its simple use of materials and minimal details. A tall undulating wall will define the separation between foyer and auditoriums, between reality and fiction. In addition the foyer will contain rest areas, a coatroom, café, bars and a restaurant.

”Back of House” –These are the production areas of the building. Here one can find all the workshops, storage areas, rehearsal rooms, changing rooms, offices, and every facility necessary to produce an opera or ballet. Here the building has 4 floors and one basement. The production areas are flexible and robust, accepting changes over time. The architecture and the use of materials are functionally appropriate; the exterior façade is composed of metal panels.

The roofscape describes the building’s monumental character. The horizontal and sloping plane of the roof provides the opera with an unusually dramatic expression, quite different from the surrounding buildings. Its openness and accessibility will allow for a wide range of visitors to traverse its many terraces. The roofscape will be open to the public; it is clad in white stone, and its details will provide a holistic and symbolic character to the building while also providing a variety of experiences as one moves past it.

THE OPERA IN THE CITY

The new opera in the Bjørvika area of Oslo shall be built in a part of the city that has been characterised by its harbour activity and heavy automobile and train traffic. The city council has decided to develop this area into an attractive and living centre for business, dwelling and cultural activities. In this regard the nearby highway, the E18, shall be placed in a tunnel under the Bjørvika and Bispevika areas. This will take many years to complete however, the master plans have been established for these changes.

The opera will have a central role in binding the historical city structure toward the west with the newer city developments along Bispevika and the Ekeberg hill to the east. This will further connect the city to its sea and fjord landscape. The north – south axis will also help to further connect the fjord with the already established city spaces of the Central Station Plaza and the Karl Johan pedestrian street. The building's sloping form rises up from the sea. This large sloping surface will further create the impression of the building as a natural element more than an artificial construction. Snøhetta has underscored this expression with its choice of materials and formal choices in the overall expression.

ACOUSTICS

The main auditorium will be designed so that no amplification or electronic assistance is required to obtain the optimum acoustics. The room shape will be designed to ensure that sound will naturally reflect around its surfaces to the audience. In this regard, the horseshoe form, a classical tradition in opera design, provides the best compromise between acoustics and intimacy and has been chosen for the new opera's main auditorium. The materials are also important with respect to reverberation and acoustics. With reflective walls and ceilings, the acoustics will be sharper, while broken surfaces create a more diffuse sound. The new opera will be designed to provide reflected sound early, combined with a long reverberation time. To provide the best possible solutions, both a physical model and a data model are being used to simulate the room's acoustic qualities.

ARTISTIC INTEGRATION

A formal committee has been established to monitor the introduction of artists in the development of the building design. The committee has defined the opera as an arena for the meeting between art and architecture, between the public and performer, and between land and sea. From this perspective the development of arts projects have been divided into four primary areas, all related to the building's overall concept.

The first stage initiates several projects to artistically develop, for example, the foundation stone ceremony or other ceremonies that may occur during the building process. The second stage is to develop the building's two main elements, the stone roof and the metal facades. These elements will be developed in close association with the architect. The third stage will be to develop a competition for the development of the building's main interior elements including the public foyer and the stage curtain in the large auditorium. The last stage of artistic development will be separate from the actual building and will be defined by the area of the harbour surrounding the building. The intention is to develop an environment where both national and international artists can create the most meaningful artistic solutions.

FOUNDATIONS

The new opera will be situated partly on land and partly over water. This has significant consequences related to the foundation design, handling of polluted soil, control of moisture and, not least, the building's water tightness. To create a stable and dry working environment, the construction shall require some 12000 square meters of steel sheet piling around the perimeter of the site.

The foundations also require some 28 000 metres of piles to act as supporting elements for the building above. The piles vary in length and can reach up to 55 meters below the water surface before meeting stable bedrock.

Pollution

The Norwegian State regulations have strict requirements for the handling of polluted soil. The area shall be protected so that no pollutants shall be distributed into the fjord. There are approximately 12000 cubic meters of polluted soil on the opera site that must be controlled and sorted in various grades and deposited accordingly. In addition an area of approximately 20000 square meters of polluted soil will be contained using geo-sheets with a minimum of half a meter of clean sand on top. This is an area equivalent to about 4 football pitches.

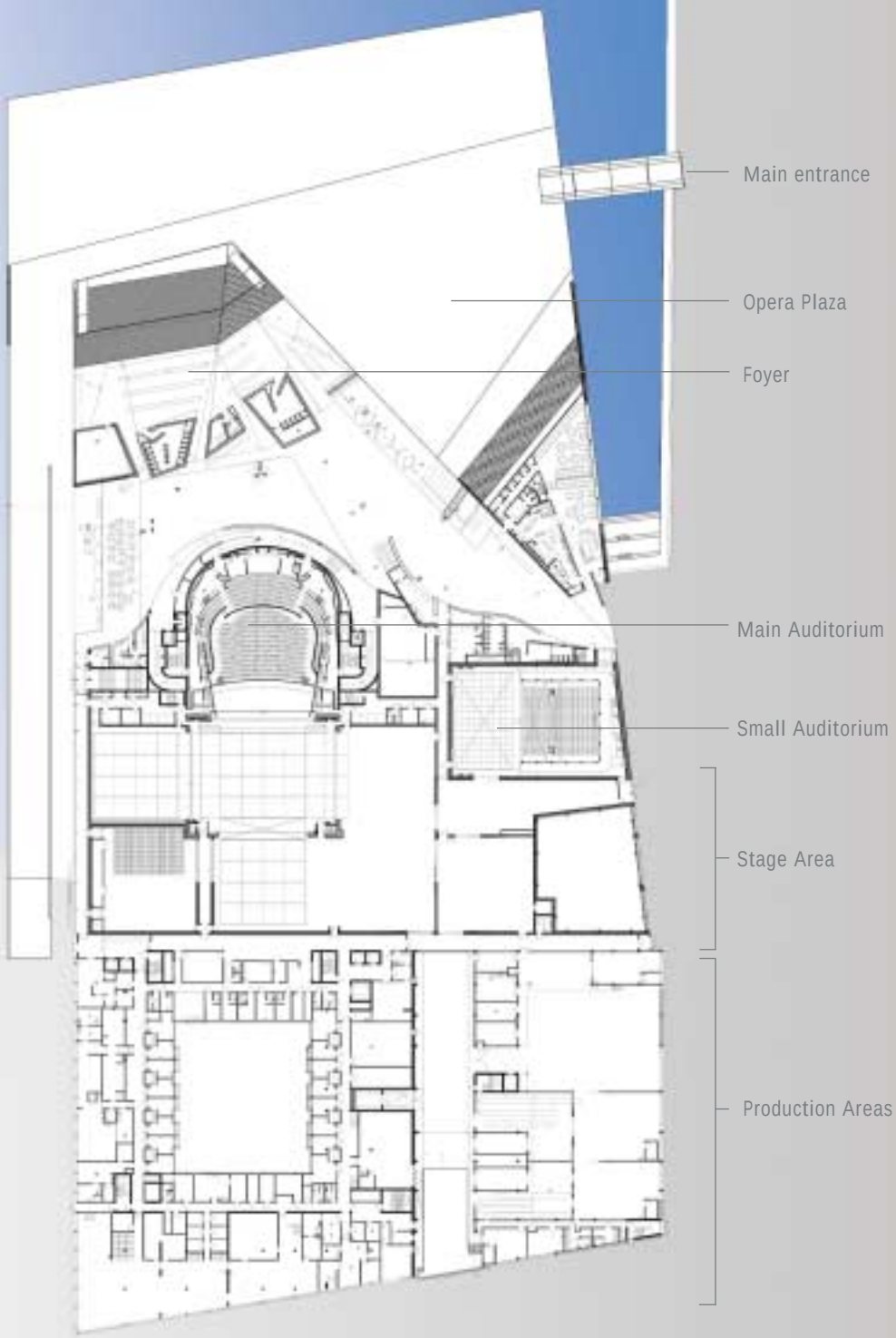
SHIP BARRIER

A large portion of the new opera is located in the sea. The ferry terminal areas at nearby Vippetangen will be maintained, and there will soon be docking of cruise ships at Revier Quay, only 100 meters from the new opera. The Norwegian Veritas organisation has carried out a risk analysis of the site in relation to ship traffic, and concluded that the risk of a ship's collision with the new opera is unacceptably high. The best solution to control this was found to be a new underwater ship barrier close to the building. The barrier will be placed just south of the opera and built up to 2 meters below the sea surface. It will be 70 meters wide at its base and 10 meters wide at its top and will effectively stop any ship in the area. The development of this structure has been carried out in co-operation with the Public Roads Administration and the Oslo Port Authority.

ARCHAEOLOGY

The Bjørvika area is composed of several meters of sawdust from earlier sawmills that existed from the 1500's along the adjacent river, the Akerselva. The sawdust has particular conservation properties related to what is below the surface. In addition the coastline reached farther up earlier in history due to general land rise. In this regard there likely exists various boats and other ancient artefacts in what was formerly sea.

One aspect of obtaining permission to build the opera is related to exploring the archaeological finds on the site. Two archaeologists will be on site to follow each shovel of soil taken from the ground. 5000 manhours have been allocated for this research. The Norwegian Maritime Museum will be responsible for this work.



Plan, Ground floor

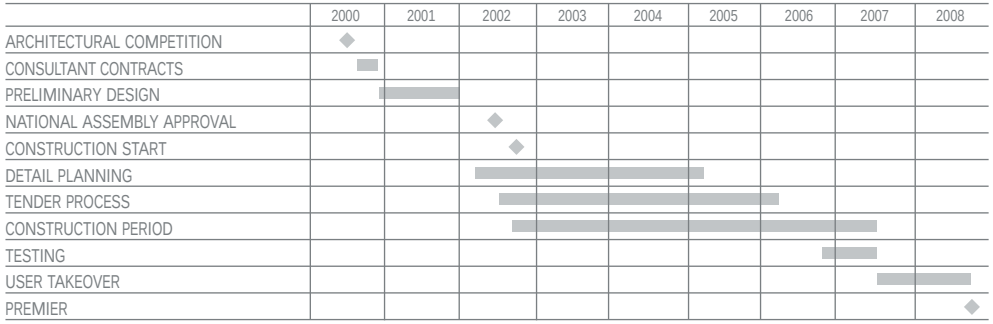
STATSBYGG IS THE CLIENT FOR THE NEW OPERA

Statsbygg - The Directorate of Public Construction and Property - is responsible for the planning and construction works for The New Opera House on behalf of The Ministry of Cultural and Church Affairs.
Statsbygg is The Directorate of Public Construction and Property and acts on behalf of the Norwegian government as manager and advisor in construction and property affairs. Statsbygg is an administrative body, responsible to the Ministry of Labour and Government Administration, and operates in accordance with standard business principles.

The project development for the new opera began in 2001 and is split into five contracts. These are:

ARCHTECTS:	Snøhetta AS	www.snoarc.no
CONSULTANTS:	RREH (Ingeniør Per Rasmussen AS - elektro, Reinertsen Engineering ANS (med NGI-geoteknikk) - bygg, Erichsen & Horgen A/S - VVS.)	
ACOUSTICS:	Brekke Strand Akustikk, Arup	www.bs-akustikk.no
THEATRE TECHNICS:	Theatre Projects Consultants	
SUBSTAGE, EQUIPMENT:	SCC (Scandiaconsult Sverige AB)	www.scc.no

TIME SCHEDULE



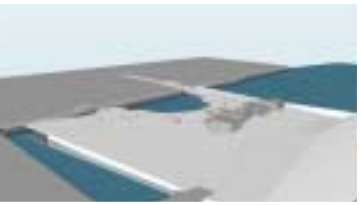
CONTRACT STRATEGY

Snøhetta won an international competition for the new opera-house in 2000. Snøhetta is responsible for all of the project development in relation to the architectural design. Additionally, the technical consultants were acquired through an international competition.

All the construction contracts of the new opera house will be subject to international bidding. Statsbygg intends to divide the work into a reasonable number of contracts with clear schedule requirements and interfaces between the various contracts.

Some main contracts will be defined, and minor contracts will be transported to these contracts in order to reduce the number of contracts and simplify the contractual interfaces.

The theatre equipment will be divided into approximately 10 pro-curement packages, which will be subject to international bidding.





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