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and reports of the Board of Auditors**

Strategic heritage plan of the United Nations Office at Geneva

Note by the Secretary-General

Pursuant to section V, paragraph 11, of General Assembly resolution [68/247 A](#), the Secretary-General has the honour to transmit herewith the fourth report of the Board of Auditors on the strategic heritage plan of the United Nations Office at Geneva.

* [A/77/50](#).



Letter of transmittal

Letter dated 21 July 2022 from the Chair of the Board of Auditors addressed to the President of the General Assembly

I have the honour to transmit to you the fourth report of the Board of Auditors on the strategic heritage plan of the United Nations Office at Geneva.

(Signed) Jorge **Bermúdez**
Comptroller General of the Republic of Chile
Chair of the Board of Auditors

Report of the Board of Auditors on the strategic heritage plan of the United Nations Office at Geneva

Summary

The strategic heritage plan involves the renovation of the United Nations Office at Geneva and the establishment of a new permanent building H to meet the requirements of the Organization and address health, safety and working conditions. The Office serves as a global centre for, inter alia, activities related to sustainable development, humanitarian work, human rights, disarmament and disaster risk reduction. The Office complex is the largest United Nations conference centre in Europe.

In its resolution [68/247](#) A of 27 December 2013, the General Assembly concurred with the need to address the health, safety, usability and access conditions of the Palais des Nations. In the same resolution, the Assembly stressed the importance of oversight with respect to the development and implementation of the strategic heritage plan and requested the Advisory Committee on Administrative and Budgetary Questions to request the Board of Auditors to initiate oversight activities and to report on the plan to the Assembly. Pursuant to resolution [68/247](#), the Chair of the Advisory Committee requested the Board to consider the matter and to report thereon to the Assembly. In response, on 27 August 2014, the Chair of the Board of Auditors confirmed that the Board would audit and report on the strategic heritage plan.

In its resolution [70/248](#) A of 23 December 2015, the General Assembly approved the proposed project scope, schedule and estimated cost of the strategic heritage plan in the maximum amount of SwF 836.5 million. It was then expected that the project would be completed in 2023. It had been planned that the project would be implemented in two main phases: the construction of the new permanent building H commenced in 2017 and was initially contracted to be completed in 2019 and the renovation of the Palais des Nations was envisaged to be completed in 2023.

In the eighth annual progress report of 24 September 2021 on the strategic heritage plan ([A/76/350](#)), the Secretary-General informed the General Assembly of the substantial progress on the completion and occupancy of building H, including fire and life safety testing of the building, furniture installation and delivery of the occupancy permit by the Geneva authorities on 17 May 2021 as well as the successful completion of the pre-construction services phase of the renovation of the 1930s and 1950s historic buildings and signature of the contract amendment at the end of December 2020.

The Board of Auditors audited remotely and by conducting audit visits to the United Nations Office at Geneva from 13 to 17 September 2021, from 2 to 19 November 2021 and from 1 to 28 January 2022.

Introductory remarks

On 4 October 2021, the substantial completion certificate for building H was signed on behalf of the United Nations Office at Geneva.

With regard to the renovation of the Palais des Nations, the contract with the construction firm was amended in December 2020 to record the agreement of the guaranteed maximum price and the renovation works were ongoing at the time of the Board's most recent visit.

The Board acknowledges that the strategic heritage plan team has made substantial progress as attested by the completion of the construction of building H and by the agreement of the guaranteed maximum price and the renovation works on the historical buildings of the Palais des Nations.

Status of implementation of previous audit recommendations

The Board reviewed the status of implementation of previous recommendations, taking into account the updated responses given by Management in January 2022 to the Board's audit reports (A/74/5 (Vol. I), A/73/157, A/72/5 (Vol. 1) and Corr.1). Out of the 43 recommendations made, 39 (91 per cent) had been implemented and 4 (9 per cent) were under implementation, as indicated in annex I.

Status of current audit recommendations

The Board discussed the observations and conclusions with the United Nations Office at Geneva, whose views have been appropriately reflected. Management accepted the recommendations and agreed to take appropriate action.

Key findings

The Board's key findings are summarized below.

Risk management

In response to the observations made in the Board's management letter for the year ended 31 December 2020, regarding, for example, anomalies in the risk database and information irrelevant to recipients of monthly and quarterly risk management reports, the risk management firm developed and implemented a risk management improvement plan to provide a better level of service. In January 2022, the Board again reviewed the risk registers and noted that anomalies in the risk database had been eliminated. Irrelevant and redundant information had been removed from risk registers in monthly and quarterly risk management reports.

The Board noted that, since August 2018, the risk-assessed chance of delivering the strategic heritage plan project within the available budget had declined almost continuously from 66 to 2 per cent by January 2021 but ever since had shown an upward trend, increasing to 20 per cent by December 2021.

While recognizing that the strategic heritage plan team has been focusing on renovation risks and while having observed since September 2021 a slight increase in the chance of delivering the strategic heritage plan project within the budget, the Board is nevertheless of the opinion that the upward trend may not be sustainable.

Directly attributable costs

For the abatement of asbestos, the strategic heritage plan team allocated approximately SwF 4.5 million to assets under construction in line with industry best accountancy practice. As asbestos abatement improves a building's safety beyond that of its original condition and extends its lifespan, dismantling and removal costs should be accumulated on assets under construction and then transferred to the final asset.

Substantial completion of building H

Substantial completion represents the stage at which the whole of the works or their relevant sections or parts are complete, except for minor omissions and minor defects, which are set out in a punch list. Substantial completion as defined in the

building H contract signifies, inter alia, that all mechanical and electrical systems have been successfully tested and as-built documentation (including operation and maintenance manuals) is available.

In May 2021, following inspections performed by the fire police and by the inspector for the permit delivery service, the Swiss authorities delivered an occupancy permit to the United Nations Office at Geneva.

At the end of September 2021, the strategic heritage plan team considered that the execution of the construction work for building H had reached the substantial completion stage, excluding minor pending works documented in the punch list such as final functional tests for lighting, blinds, ventilation, heating and cooling. The strategic heritage plan team signed the substantial completion certificate, agreeing with the contractor that the contractor would continue to be responsible for the proper functioning (operation and maintenance) of the few technical systems that had not yet undergone final testing or approval. On the same day, the strategic heritage plan team transferred building H to the United Nations Office at Geneva.

Need for functional testing of solar panels

One of the objectives of the strategic heritage plan is to increase electricity generation from solar panels. In March 2021, the contractor installed 152 solar panels on the roof of building H. According to the punch list, functional testing of the solar panels still needs to be conducted by the contractor and consequently the solar panels have not yet been handed over. One year later, the strategic heritage plan team could not confirm when the solar panels would be completed and start to produce energy, as the strategic heritage plan is still finalizing the agreement with the contractor on the variation.

Building H accessibility

For a person who uses a wheelchair or a walking frame to open a door easily, a manoeuvring space of not less than 600 millimetres between the leading edge of the door and a nearby wall is typically necessary. Currently, building H does not have adequate manoeuvring space for persons with disabilities: for example, a wheelchair cannot be used in front of at least 11 doors.

With respect to accessibility frameworks, one of two different surfaces should have a light reflectance value of a minimum of 60 points for potential hazards. In building H, the light reflectance value between the grey granite area and the grey carpet surfaces with a different height under the landscape stairs was low and inadequate. Furthermore, there were no guards or other security elements, as planned, between the granite and carpet surfaces. This may cause persons with a visual impairment to trip over the raised area or knock their head against the stairs above.

While the occupation of building H had started in May 2021, embossed Braille and other forms of tactile information at each end of the handrails were completely missing.

A common cause of discomfort for the visually impaired is glare from inadequately shielded light sources and reflections, which could lead to misidentifications and difficulties in distinguishing reflections from real objects. In building H, the in-ground luminaires that have been installed in front of the elevators and in the town hall lobby produce glare near information signs. This could pose a risk for visually impaired persons.

Maintenance

In addition to reviewing the actual implementation of the strategic heritage plan, the Board reviewed the benefits management approach which defines the management actions that will be put in place to ensure that strategic heritage plan outcomes are achieved and to confirm that the benefits are realized.

In advance of the approval by the General Assembly, in its resolution 70/248 A of 23 December 2015, of the proposed project scope, schedule and estimated cost of the strategic heritage plan, the Secretary-General, in his report of 9 September 2013 on the strategic heritage plan of the United Nations Office at Geneva (A/68/372), referred to the comprehensive study commissioned to develop a detailed implementation plan and cost analysis for the strategic heritage plan. The study compared, inter alia, the expected maintenance expenditures envisaged under the strategic heritage plan with a continued reactive maintenance approach and the results showed significant long-term benefits to Member States under the strategic heritage plan.

At the time of the audit, the approach of the United Nations Office at Geneva to post-maintenance services was to perform as much preventive maintenance as possible within the available budget, as this was viewed as the most cost-effective approach.

The Board holds that both reactive and preventive maintenance can be cost-effective and that a criticality analysis and a subsequent cost-benefit analysis must be conducted before the United Nations Office at Geneva decides how to maintain particular pieces of equipment and how to carry out technical installations.

The United Nations Office at Geneva has to commence tracking maintenance efficiencies to ascertain whether the reductions in maintenance costs are actually being achieved in accordance with the expectations expressed in the 2013 report of the Secretary-General.

In order to ensure more efficient building maintenance, the Board perceives the need to track the changes in maintenance costs resulting from the strategic heritage plan, starting with building H and continuing with each of the buildings being renovated following its completion.

Building information modelling: data for operation and maintenance

Building information modelling (BIM) is a method that uses computer technology in the design, engineering, construction and operation of a built facility through creation of a computer model of the facility. This method also aims at providing seamless links between a construction project's owners, designers, construction professionals, contractors and end users. The amounts of information relevant to the planning, construction, operation and maintenance of a building that are contained in a BIM model can vary depending on the objective. The as-built BIM model can also provide data on what was built for further use by facility management. As-built BIM model can include not only the three-dimensional geometry of the components but also non-geometric facility management data such as room data, product data sheets, warranties and lists of spare parts, as well as links to the required documents. The overall purpose of using as-built BIM models and facility management information is to enable the operator to leverage building data throughout the building life cycle in order to provide safe, healthy, effective and efficient work environments.

Ideally, data transfer from the as-built BIM models and data files to a facility management system should be complete, structured and recurring, without further adjustment. The data transfer should be thoroughly tested by the relevant stakeholders, including the design team, the contractor and the future operator, before the as-built BIM models are handed over.

The strategic heritage plan team uses building information modelling for the design, construction and as-built geometric condition of the strategic heritage plan project and for inclusion of certain types of as-built operation and maintenance data. The strategic heritage plan team did not plan tests for the data transfer from the as-built BIM models to the facility management systems.

When data have not been transferred completely, an enormous effort will be required to effect the subsequent entry of the data into facility management systems, which may also involve additional costs.

Design changes for the historic building

In the context of construction projects, in a request for information by the contractor, clarification is sought on some aspect(s) of the project such as design plans, drawings, specifications, site conditions and agreements. In some cases, the responses to requests for information may result in variations, which change the types of works to be carried out within the contractor's scope of works compared with those listed in the overall contract. Variations can be very small or very large and may affect the overall complexity as well as the duration and final cost of the project.

In January 2022, the monthly reports on the status of the renovation of the historic building showed a total of 797 requests for information and 27 design- and construction-related variations (both approved and in progress) with a total value of approximately SwF 2,800,000.

In some cases, variations are not the result of issues that were not identified or known at the planning stage but rather stem from incomplete planning. Potentially, this means unnecessary additional administrative and coordination efforts entailing additional costs.

Delays in procurement of building E works

The Board noted that the procurement procedure for building E works had started significantly later than scheduled in 2020. Moreover, the steps that had been completed at the time of the audit in February 2022 had taken longer than originally planned in 2020. The deadline for submission of proposals by bidders ended in February 2022 which is about one year later than originally envisaged. To mitigate the consequences of this delay and delays in the renovation of the historic buildings, a significant portion of the building E works will overlap with the design completion and the pre-construction services phase.

The Board perceives a risk of further delays in the procurement of building E works, as the envisaged time frame of less than four months for the evaluation of the bidders' proposals, further negotiations and contract finalization seems rather tight with respect to the complexity of the works and the contract structure. The planned overlap of early action works with the activities associated with design completion and pre-construction services entails further risks which will need to be carefully managed. Given that the building E works are clearly situated on the project's critical path and that every month of delay in overall completion entails significant costs, sufficient human resources and streamlined cooperation of the parties involved have to be ensured.

Heritage and works of art

The strategic heritage plan team developed a comprehensive inventory of works of art in 2015. In the fourth annual progress report on the strategic heritage plan of 9 October 2017 (A/72/521), the Secretary-General stated that an exhaustive inventory of works of art had been finalized in full coordination with the United Nations Library Service. However, the Board noted a lack of specific inventory numbers for each item of five series of work of art and incomplete information in the database. In addition, the location of eight of those works of art was unknown.

Having received a donation from a Member State, the United Nations Office at Geneva renovated conference room XIX prior to the implementation of the strategic heritage plan. In this context, the art and heritage experts listed alternative solutions for furniture and deposed materials and emphasized that the value of the furniture was evident. The United Nations Office at Geneva was able only to identify opportunities to repurpose some of the furniture.

Sustainability

In the 2030 Agenda for Sustainable Development,¹ the imperative of incorporating sustainability considerations into activities and operations of United Nations entities was emphasized. Building H is designed to ensure a better quality of construction, to ensure lower operational costs and to reduce overall life cycle costs.

The contractor used wooden beams from sustainably managed forests for building H. However, only 50 per cent of wood-based materials were certified as being from sustainably managed forests. While refrigerants with a low global warming potential can be as much as 25 per cent more energy-efficient than refrigerants with a higher global warming potential, building H has nine heat pumps and 11 beverage coolers utilizing refrigerants with a higher global warming potential.

Main recommendations

The Board has made recommendations for improvements throughout the present report. The main recommendations are that management:

Risk management

(a) Continue to seek opportunities for exerting a positive impact on strategic heritage plan project objectives and have fallback plans in readiness should risks materialize which challenge completion of the project within the budget;

Directly attributable costs

(b) Allocate all costs for the abatement of asbestos to assets under construction and liaise with the United Nations Office at Geneva on the accounting treatment for transferring those costs to the final asset;

Substantial completion of building H

(c) Ensure that the punch list works, tests and defects are carried out as expeditiously as possible;

(d) Closely supervise the operation and maintenance of the contractor with respect to the systems not yet finally accepted as listed on the punch list

¹ Resolution 70/1.

until those systems are fully approved by the strategic heritage plan team and can then be operated and maintained by the United Nations Office at Geneva;

Need for functional testing of solar panels

(e) Take the necessary steps to reach an agreement with the contractor for building H so that the solar panels can produce electricity as soon as possible;

Accessibility

(f) Analyse the reasons for and the circumstances associated with the occurrence of accessibility-related mistakes;

(g) Install a clear set of instructions and enhance the monitoring of its inclusion strategy;

(h) Examine the contractor's invoices to determine whether the contractor was overpaid;

(i) Improve access to the corridors that are close to an accessible bathroom and bring the manoeuvring space into full compliance with the accessibility framework;

(j) Review the reasons why changes in this area have been inadequately implemented so as to enable understanding and application of lessons learned;

(k) In liaison with the Swiss consultancy agency, realize disability-friendly construction under all staircase surfaces;

(l) Eliminate as soon as possible the physical and technical barriers faced by persons with disabilities as described above;

Variation procedure

(m) Consider whether the upcoming building E works contract should stipulate a right of the employer to instruct and confirm variations that are not subject to a prior agreement with the contractor on cost and time impacts in order to improve the timely delivery of the works;

Delay damages for building H

(n) Examine whether and to what extent delay damages may be asserted owing to the delays in the substantial completion of sections 3.A and 3.B of building H where they are attributable to the contractor;

Maintenance

(o) Assess whether the implementation of the strategic heritage plan will effectively meet expectations of Member States for a reduction in maintenance costs borne by the regular budget for United Nations Secretariat operations at Geneva;

(p) Report to the General Assembly on maintenance and operating cost trends for the Palais des Nations;

(q) Decide on whether to perform reactive or preventive maintenance, or a combination of both, for equipment and technical infrastructure based on a criticality and cost-benefit analysis;

Building information modelling: data for operation and maintenance

(r) **Start the tests for data import from the Construction Operations Building Information Exchange (COBie) to Computer-Aided Facility Management (CAFM) systems at short notice;**

Design changes for the historical building

(s) **Improve its oversight of the work of the design services firm and its quality control procedures to ensure that future technical designs are clearer and more accurate;**

(t) **Assess whether there is a potential for recouping any additional costs that may have arisen as a result of inaccuracies or incompleteness in technical design;**

Delays in the procurement of building E works

(u) **Monitor to determine whether the internal human resources and communication processes for the further procurement and pre-construction, early works and renovation contract processes for the office tower dismantling and renovation works on building E are sufficient and timely enough to avert further delays;**

Heritage and works of art

(v) **Preserve the heritage, prevent irreversible deterioration or damage, and restore and maintain the capital value of the Palais des Nations and its contents as far as possible within the budgetary constraints both during and after the ongoing renovation process of the Palais des Nations;**

(w) **Continue storing heritage furniture to the extent feasible considering economical, budgetary and operational constraints in appropriate areas to obviate the loss of value of furniture with a high heritage value as a result of unsuitable or inappropriate storage;**

(x) **Ensure the further revision and incorporation of all relevant details into the works of art database, wherever possible;**

Sustainability

(y) **Integrate more thoroughly the principles of whole life cycle costing of the materials and products used in its future projects and set more ambitious targets for sustainability for its future capital projects.**

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Strategic heritage plan: key facts

Objective:	To modernize and renovate the United Nations Office at Geneva complex at the Palais des Nations in Geneva
SwF 836.5 million	Approved maximum overall cost
2017	Commencement of construction work on new permanent building H
2020	Envisaged completion of construction of new permanent building H and commencement of renovation of the 1930s and 1950s historic buildings A, B, C, D and S
2022	Envisaged commencement of dismantling and renovation of the 1970s building E
2023	Envisaged completion of renovation of the 1930s and 1950s historic buildings A, B, C, D and S
2024	Envisaged completion of renovation of the 1970s building E

A. Mandate, scope and methodology

1. The United Nations Office at Geneva is the representative office of the Secretary-General of the United Nations in Geneva. The Palais des Nations is a historical office of the United Nations and serves as the largest United Nations conference centre in Europe. The strategic heritage plan involves the renovation of the Palais des Nations and the establishment of a new permanent building H to meet the requirements of the Organization and address health, safety and working conditions.
2. In its resolution [68/247 A](#), the General Assembly stressed the importance of oversight with respect to the development and implementation of the strategic heritage plan and requested the Advisory Committee on Administrative and Budgetary Questions to request the Board to provide oversight assurance and to report annually on that matter to the Assembly.
3. Pursuant to the above-mentioned resolution, the Chair of the Advisory Committee on Administrative and Budgetary Questions requested the Board to consider the matter and report annually thereon to the General Assembly. In response, on 27 August 2014, the Chair of the Board confirmed that the Board would audit and report on the strategic heritage plan.
4. The first report of the Board ([A/70/569](#)) was issued on 24 November 2015 and discussed by the General Assembly at its resumed seventieth session. The Board reconsidered its reporting timelines, keeping in mind that it would be more effective to align its reports with the annual progress report on the strategic heritage plan, and agreed on 7 September 2016 to submit its remaining four reports on the strategic heritage plan in July of 2018, 2020, 2022 and 2024.
5. The Board audited remotely and by conducting audit visits to the United Nations Office at Geneva from 13 to 17 September 2021, from 2 to 19 November 2021 and from 1 to 28 January 2022.

6. The audit was conducted in accordance with General Assembly resolutions [74 \(I\)](#) and [68/247 A](#), in conformity with the Financial Regulations and Rules of the United Nations and the International Standards on Auditing, as applicable.

B. Project overview

7. Since the construction of the Palais des Nations in the 1930s and 1950s and building E in 1973, the compound has undergone only routine maintenance and repairs that were considered necessary for the Office's continued operations. Without routine capital replacement of building components as they reach the end of their life-cycle, such maintenance approach over time has resulted in a continued increase in maintenance requirements and costs, as well as an increasing risk to the safety, security and health of United Nations delegates, staff and the more than 100,000 visitors per year. As a result of the gradual deterioration of the buildings of the Palais des Nations over several decades, the strategic heritage plan was initiated to renovate and modernize the compound. The United Nations Office at Geneva serves as a global centre for the Organization's activities related to sustainable development, humanitarian work, human rights, disarmament and disaster risk reduction. The Palais des Nations is the largest United Nations conference centre in Europe. The buildings contain 34 major conference rooms and approximately 2,800 workspaces, including 222 touchdown workspaces for conference participants.

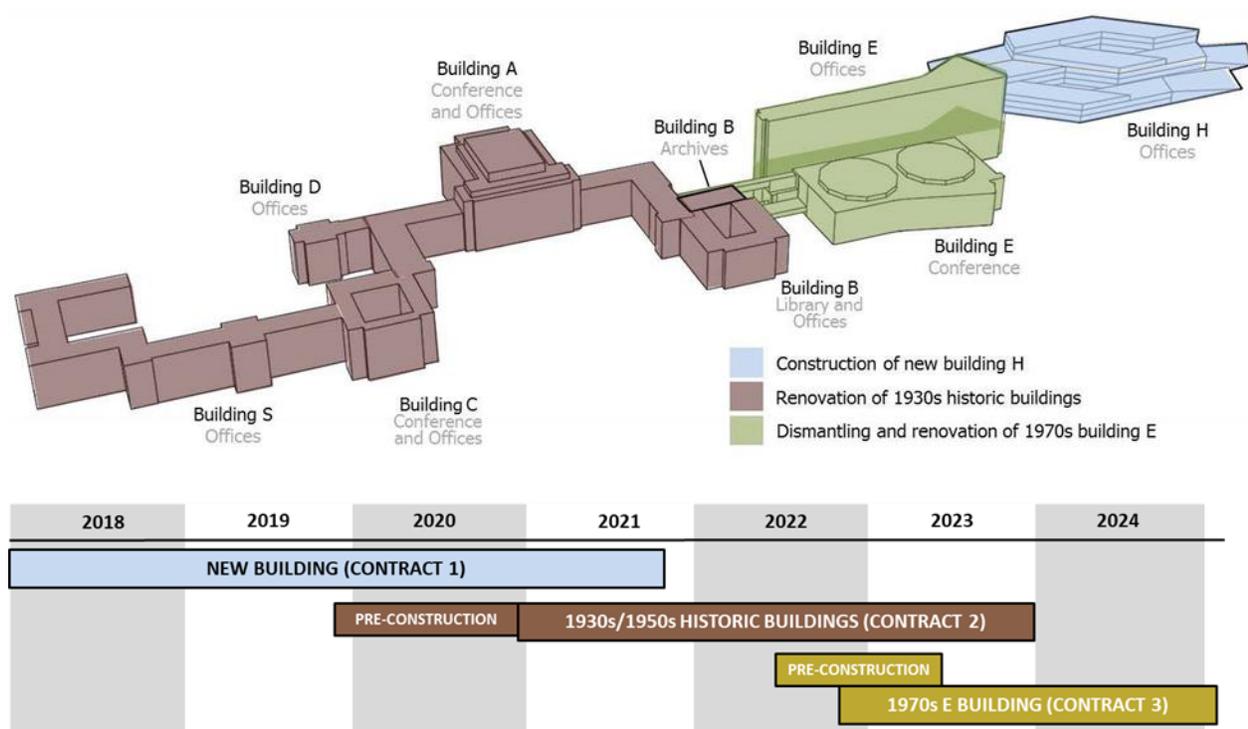
Annual progress report of the Secretary-General

8. The latest progress report of the Secretary-General on the strategic heritage plan of the United Nations Office at Geneva ([A/76/350](#)) is the eighth annual progress report and was submitted pursuant to General Assembly resolution [73/279 A](#). The report provides a summary of the planning and construction-related actions undertaken between 1 September 2020 and 31 August 2021.

C. Background

9. According to the project schedule (see also annex I to the present document for the schedules of project implementation as of September 2015, September 2017 and February 2020), the strategic heritage plan construction work consists of three main sections (see figure I): the construction of the new permanent building H, the renovation of the historic 1930s and 1950s buildings A (mainly conference rooms including the assembly hall), B1 (historical archives), B2 (library, offices), C (a mix of offices and conference rooms), D and S (mainly offices), and work relating to the 1970s building E (renovation of the conference rooms, dismantling of the office tower).

Figure I
Overview of the Palais des Nations building complex and works timeline



Source: Eighth annual progress report of the Secretary-General (A/76/350); the timeline was adapted by the Board of Auditors according to the planning of the strategic heritage plan team.

10. The schedules of these three main sections are interdependent. Mainly, the project phasing needs to ensure that both a minimum of office space and a minimum of conference space will be provided throughout the entire project. In this regard:

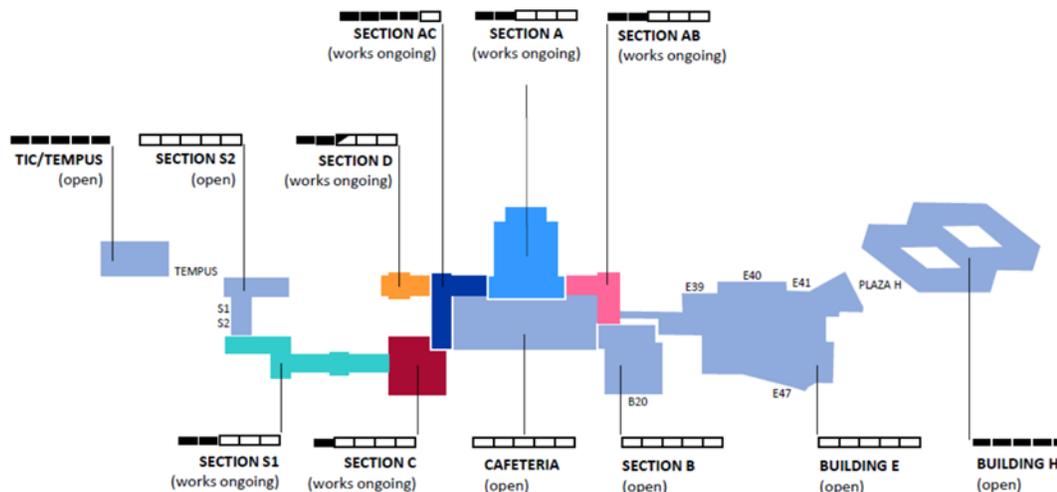
- In terms of office space, the strategic heritage plan team uses building H office space as swing space for the staff that have to leave the offices in the 1930s historic buildings, mainly in building S, during the renovation works. After the temporary occupants of building H will have moved back to building S, building H is intended to compensate for the decrease in office space that will result from the dismantling of the office tower of the 1970s building E. Moreover, building H is intended to ultimately provide a new home for the Office of the United Nations High Commissioner for Human Rights, enabling the United Nations to dispose of the two premises currently leased by the Office of the High Commissioner. The renovation works for building S therefore started following the occupancy of building H. Accordingly, the work on building E is scheduled to start after the completion of the work on the main section of building S.
- In terms of conference space, the renovation of building E will not be able to start before the conference rooms of building A have been renovated and returned to use. The coronavirus disease (COVID-19) pandemic led to a significant decrease in conference activities in 2020 and 2021 (see para. 61). Hence, more historic buildings with conference rooms were able to be renovated in parallel than originally planned.

- In addition, a temporary conference facility, which had not been part of the original project scope, was completed and commissioned and is now in use.

11. Figure II gives a schematic overview of the various work sections and the progress of each as of February 2022.

Figure II

Overview of the various work sections and the progress of each



Source: Monthly report No. 86 (February 2022) of the strategic heritage plan team.

12. During the course of the audit, the Board reviewed the planned and the actual project progress and made the observations below (see also annex I for a comparison of the current project schedule with preceding project schedules).

Construction of building H

13. Initially, the contractual completion date for building H (section 3) was 29 November 2019.

14. As reported in the previous reports by the Board, the United Nations Office at Geneva and the contractor adapted the initial completion date several times with regard to variations including the full implementation of flexible workplace and delays during the works.

15. With respect to the site closure and delays attributable to the COVID-19 pandemic, the contractor issued a notice of force majeure in 2020. To avoid or settle any potential disputes over the force majeure effects of the COVID-19 pandemic and various claims that had not been solved up to that point in time, the United Nations Office at Geneva and the contractor eventually agreed on an amendment to the construction contract in January 2021. Pursuant to that amendment, the contractor agreed to hand over levels 1 to 4 of building H (section 3.A) by 22 March 2021. The agreed contractual date for the handover of levels 5 and 6 of building H (section 3.B) was 19 April 2021.

16. The sections had not been completed at the contractual completion dates as defined in the amendment of January 2021. Further, by May 2021, neither section 3.A nor section 3.B had been substantially completed. Among other things, the building management system was not fully operational at that time.

17. To avoid further delays with respect to the delivery of the overall programme and the significant costs that would be involved in delaying the subsequent historic buildings' renovation works, management decided to take early occupation as allowed for in the contract and use building H prior to its final substantial completion.

18. On 17 May 2021, the United Nations Office at Geneva and the contractor concluded an agreement on the terms of "temporary use and occupancy" of building H, in which they referred to a specific clause of the construction contract. That clause stipulates that the use of any part of the site by the employer as a temporary measure, which is agreed by both parties, or for reasons attributable to the acts, omissions, breaches or defaults of the contractor, will not amount to a taking over by the employer.

19. Subsequently, several services of various United Nations organizations moved into building H progressively over the period starting in the second half of May 2021 and extending through to the end of June 2021.

20. Parallel to the temporary use and occupancy, the contractor executed remaining works, performed functional tests and trainings and delivered documentation. On 4 October 2021, the United Nations Office at Geneva assessed that building H was sufficiently completed in accordance with the contract and issued the substantial completion certificate. Attached to the certificate was a punch list setting out a considerable number of omissions, pending works and defects that were yet to be either completed or remedied.

21. The substantial completion certificate of 4 October 2021 was issued more than six months after the contractual completion date for section 3.A of building H agreed in the contract amendment of 29 January 2021, which had been 22 March 2021. Regarding section 3.B, the substantial completion certificate was issued more than five months after the contractual completion date agreed in the contract amendment, which had been 19 April 2021 (see also the findings under sect. D.9 entitled "Delay damages for building H").

22. At the time of the audit in January 2022, the rectification of defects and the completion of pending works were still ongoing. The building management system had still not been handed over (see also the findings under sect. D.5 entitled "Substantial completion of building H").

Renovation of historic buildings

23. The main renovation contract for the historic buildings had been signed on 15 November 2019 for the sum of approximately SwF 269.1 million. Pursuant to the contract, the construction works were scheduled to start after the establishment of a guaranteed maximum price and after the conclusion of the pre-construction services period, which was scheduled to last six months. The original contract data stated that the length of time for completing all of the works was 46 months after the date of the contract, which meant that the works would have been completed by September 2023.

24. A guaranteed maximum price of approximately SwF 268.3 million was agreed on 21 December 2020 following a pre-construction services phase of more than 13 months. According to the project team, the time overrun was due partly to the impact of the COVID-19 pandemic and partly to the fact that the contractor had to carry out more surveys than expected. Moreover, the negotiations on the first guaranteed maximum price proposal of 3 November 2020 took almost two months, instead of one month as planned.

25. Pursuant to the guaranteed maximum price agreement, the indicative completion date is 20 December 2023. This means that the time overrun during the pre-construction

services phase of seven months shall be partly compensated by a reduction of the construction period of about four months.

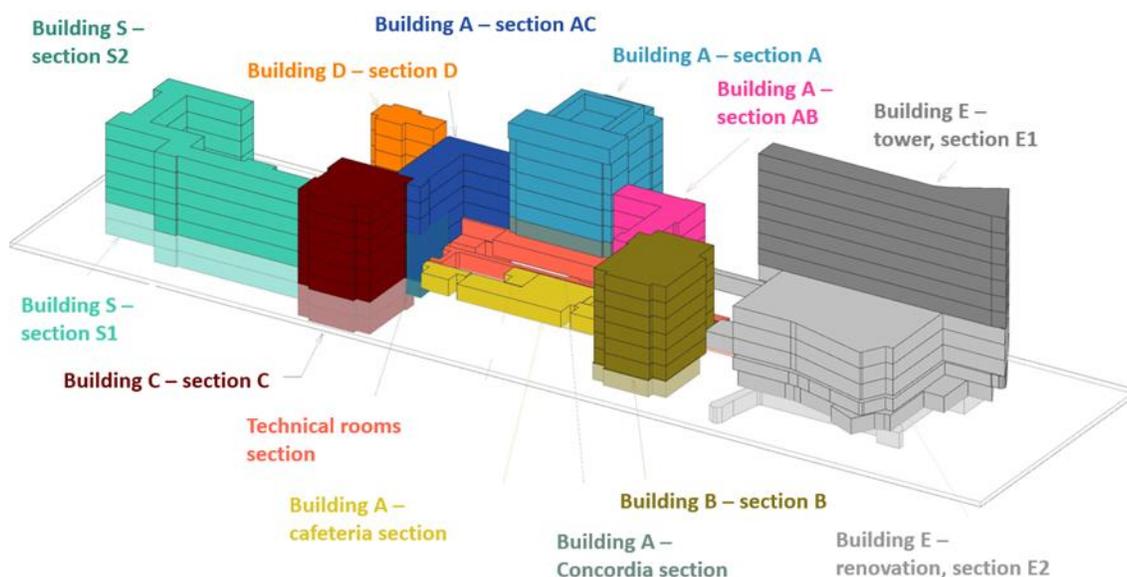
26. The reduction of the planned construction time is the result of rephasing the various sections of works. The contractor aims to deliver more works in parallel than originally planned and intends in particular to deliver parallel works on the different subsections of building A. This phasing was made possible by a significant decrease in the number of conferences held in 2021 owing to the COVID-19 pandemic.

27. Another deviation from the original phasing was the division of the works on building S into two subsections. Only the first of these subsections needs to be completed before the works on building E can start.

28. Figure III provides an overview of the sections of renovation works for the historic buildings and building E.

Figure III

Overview of sections of works for the renovation of the existing buildings



Source: Eighth annual progress report of the Secretary-General (A/76/350).

29. At the time of the audit, the strategic heritage plan team forecasted a delay of six months for section AC, signifying completion by April 2022. According to the risk management firm, the reasons for this delay are complex and include the late availability of temporary storage facilities for furniture and instructions related to revised audiovisual requirements for conference rooms.

30. The strategic heritage plan team forecasted a delay of four months for completion of building D, which is therefore expected to be completed in July 2022. The risk management firm has stated that the delay was due in major part to discovery of risks to the structure of the building, resulting in a reinforcement of the building structure and in an updated fire safety requirement.

31. Regarding section A, the testing and commissioning of the mechanical, electrical and plumbing activities in the assembly hall were delayed and could not be conducted before the World Health Organization (WHO) and International Labour Organization (ILO) conferences in May 2022 as originally planned. The strategic heritage plan team consequently discussed whether the assembly hall would be available for the WHO and ILO conferences or whether the works should be stopped

to allow the conferences to take place and the final installations, testing and commissioning conducted after the two conferences had been held. The completion of room XVI of section A was delayed because of a clash between the designed ventilation ducts and the actual beam and slab location at level 5. The completion of the whole of section A is envisaged for the end of September 2022 which would mean a delay of five months.

32. As the aforementioned delays in the renovation works at this stage are not on the critical path of the project, they should not have an impact on the overall completion date of the project. The delays will, however, impact the plans for the reoccupation of the offices and the resumption of conferences in the historic Palais des Nations.

33. General risks continue to exist, such as those posed by new variants of COVID-19, unexpected constraints in the structure of the historic buildings, design errors, poor performance by the contractor, changes in stakeholder requirements and supply chain issues.

34. In its monthly risk report of February 2022, the risk management firm forecasted that the date for completion of the historic buildings at the P80 confidence level would be May 2024.

Building E works

35. The procurement process for the 1970s building E works (renovation of conference rooms and dismantling of the office tower) was delayed and was still ongoing at the time of the audit. Details on those works are given in paragraphs 261 to 271 below. The audit ended shortly before the deadline for the final submission of proposals by bidders, which were due in February 2022.

36. At the time of the audit, the substantial completion of the building E works was envisaged for October 2024. The completion date was not shifted to the same extent as the dates of the procurement procedure. The construction time had been maintained predominantly by overlapping early works with the design completion and pre-construction services phase.

37. The early work packages, which included asbestos strip-out and removal and the commencement of the dismantling of the building E office tower, were planned to begin in October 2022. The strategic heritage plan team pointed out that the building E works could not commence until mid-2022 when the renovation of the historic buildings' conference rooms and building S would have been completed. The rest of the works was planned to commence in June 2023.

38. The Board notes that in order to mitigate the delays in the procurement process, float in the works schedule has been reduced and more works shall be executed in parallel. The likelihood that further constraints may lead to the risk of more delays has therefore been increased.

39. Since works relating to building E constitute the last section of the overall project, all delays in the completion of building E renovation works may lead to a delay of the delivery of the overall project.

40. In its monthly risk report of February 2022, the risk management firm forecasted that the date of completion of building E at the P80 confidence level would be July 2025.

Budget and expenditures

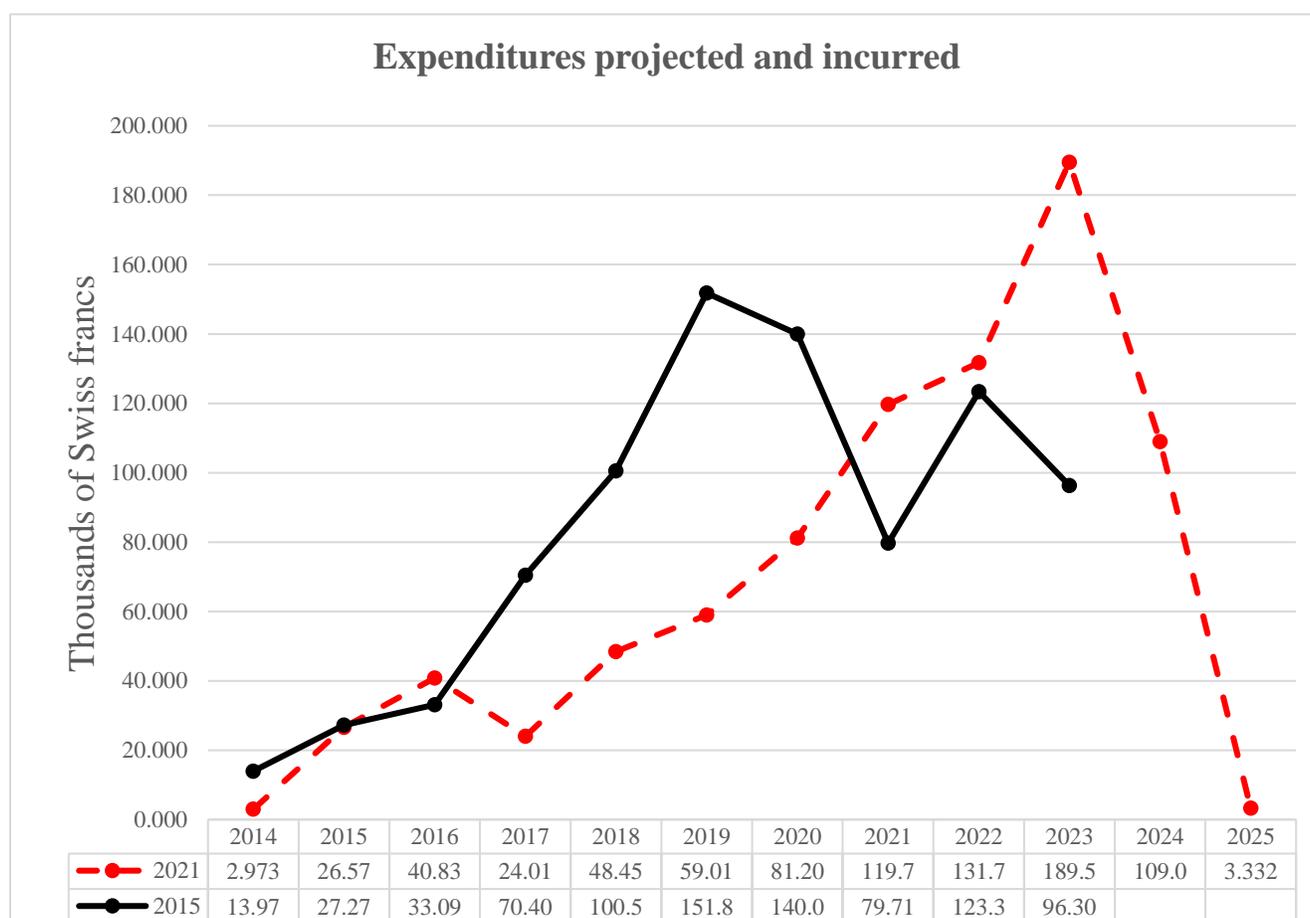
41. Pursuant to General Assembly resolution [70/248 A](#), the second annual progress report on the strategic heritage plan ([A/70/394](#) and Corr.1) became the baseline for

the strategic heritage plan project in 2015. Since then, design, procurement and construction activities of the strategic heritage plan project have been constantly evolving. The Secretary-General presented the latest project update in his eighth annual progress report (A/76/350) issued on 24 September 2021. Since 2015, the estimated and approved cost of the strategic heritage plan project has remained unchanged at SwF 836,500,000. Thus, in his eighth annual report, the Secretary-General stated that achieving the full approved project scope within the approved maximum budget continued to be very unlikely.

42. Table 1 shows the projected and incurred expenditures under the strategic heritage plan project as determined in 2015 and 2021 and spread over the lifetime of the project accordingly.

Table 1

Expenditures projected and incurred in accordance with the 2015 baseline report and the 2021 annual progress report of the Secretary-General



Source: Board of Auditors.

43. The continuous line shows projected expenditures according to the 2015 baseline report. The dotted line shows expenditures projected and incurred according to the 2021 annual report (A/76/350).

44. The different courses of the two lines display the gap between the expenditures projected in 2015 and the actual expenditures in 2021. The graph in table 1 shows that the expenditures up to 2021 are lower than those projected in 2015. The

cumulative sum difference between the 2015 projected expenditures and the September 2021 projected/incurred expenditures up to the vertical line in the graph amounts to SwF 214,041,000, representing only approximately one third of the projected amount in 2015.

45. At the end of 2021, the incurred total expenditures for the strategic heritage plan project reached SwF 402,843,000 (not shown in the graph) representing 48.2 per cent of the approved total cost.

46. Furthermore, the overall projected amount for contingencies and escalations fell from SwF 143,997,600 in 2015 to SwF 43,320,000 in 2021, which represents 30.1 per cent of the projected total amount.

47. With regard to building H, the baseline report in 2015 projected that the entire construction costs of SwF 110,456,900 excluding contingency would be spent up to the end of December 2019. According to the eighth annual report, the costs for the construction of building H, including charges in the amount of CHF 6.7 million to provide for flexible workspaces, were SwF 122,630,000. The construction of building H was completed in 2021.

48. The state of expenditures also reflects the above-mentioned delays.

49. The cash outflow and the projected expenditures show that the strategic heritage plan project has already covered two thirds of the projected timespan for the construction works and that the major part of the renovation of the Palais des Nations is still to come. Inevitably, renovation works of this scale are subject to unexpected difficulties owing to the age of the buildings. It should be mentioned that the supply chain and workforce issues related to the COVID-19 pandemic have also contributed to delays. In this regard, the Board reiterates its concerns regarding whether the full baseline project scope will be completed without exceeding the approved total cost.

Conclusion

50. Based on the information available in March 2022, the Board expresses its concern regarding both the timely completion of the project and its overall cost. The Board holds that the strategic heritage plan team should continue to address this as a priority issue.

51. Meeting the project schedule remains a challenge. Further condensation of the project schedule has increased the likelihood that mitigation of constraints-related time impacts will not be possible, which will lead to further delays. The procurement procedure for building E in particular needs to be closely monitored since the timeline is very tight and delays in this regard have a direct impact on the overall project schedule.

D. Audit findings and recommendations

1. Status of implementation of previous recommendations

52. The Board reviewed the status of implementation of previous recommendations, taking into account the updated responses given by management in March 2022 to the Board's audit reports ([A/76/5 \(Vol. I\)](#), [A/75/135](#), [A/74/5 \(Vol. I\)](#), [A/73/157](#), [A/72/5 \(Vol. I\)](#) and [Corr.1](#)).

53. Out of the 43 recommendations made on the strategic heritage plan in the Board's reports, 39 (91 per cent) had been implemented, whereas only 4 (9 per cent) are under implementation. Annex II to the present report provides a more detailed summary of the action taken in response to the recommendations made by the Board.

2. Key objectives of the strategic heritage plan project

54. The key objectives of the strategic heritage plan project are:

(a) To guarantee and ensure the business and operational continuity of the Palais des Nations by maintaining its day-to-day business;

(b) To meet all relevant regulations related to fire protection, health and life safety and building code compliance;

(c) To meet all relevant regulations relating to persons with disabilities, including provisions for accessibility and technology;

(d) To repair and update the building enclosure and the electrical, mechanical and plumbing systems in order to meet relevant health and safety regulations and reduce energy costs;

(e) To upgrade the existing information technology networks, broadcasting facilities and conference systems in compliance with industry standards;

(f) To optimize the use of the available interior spaces and conference facilities, providing flexible and functional conference rooms;

(g) To preserve the heritage, prevent irreversible deterioration or damage and restore and maintain the capital value of the Palais des Nations and its contents.

55. The Board, having reviewed the approach taken for each of these key objectives as of March 2022, would like to focus below on some aspects of each:

Key objective (a): To guarantee and ensure the business and operational continuity of the Palais des Nations by maintaining its day-to-day business

56. The United Nations Office at Geneva is the representative office of the United Nations Secretary-General at Geneva and it is the largest such office after United Nations Headquarters in New York. Its main functions are to provide financial and administrative support services to the United Nations and specialized agencies at Geneva and at other locations and to provide conference services.

57. One focus under this objective is to ensure that staff are able to work and conferences can be held throughout the span of the project. As strategic heritage plan construction work consists of three sequencing interdependent main sections (see paras. 9–10), the project phasing needs to ensure that both a minimum of both office and conference space will be provided throughout the entire project.

58. To ensure enough office space, building H offers swing space for staff that will have to leave their offices during the renovation works and to compensate for the decrease in office space resulting from the dismantling of the building E office tower.

59. In general, the shift to working mainly remotely owing to the COVID-19 pandemic led to a decrease in the number of staff working in offices. While a recommendation to return to the duty station on a voluntary basis was announced on 4 February 2022, a daily staff occupancy limit of 50 per cent was set for the premises. This arrangement has led to more home-based telework (comprising permanent and alternating telework). The permitted 50 per cent occupancy rate of building H, in particular, was never a limiting factor. During the period when work from home was either prescribed or encouraged, the Palais occupancy rate never exceeded 20 per cent. It is nevertheless true that the health and safety measures related to the COVID-19 pandemic facilitated – but did not reduce – strategic heritage plan work, relieving the project of a substantial burden with regard to needed office space and enabling more works to be carried out at the same time.

60. To ensure enough conference space, the strategic heritage plan team entered into a contract for a temporary infrastructure for conferences facility. The facility, which was not part of the original project plan has been in use since September 2020. The total contract value is SwF 9,632,745.63. The temporary infrastructure for conferences replaces conference facilities in the Palais des Nations (buildings A and E) while renovation works are under way in the two buildings. The building, which was equipped to host virtual and hybrid conferences, has the capacity to host up to 600 participants.

61. Moreover, the COVID-19 pandemic led to a significant decrease of conference activities by 65 per cent from 2019 to 2020 (see table 2). In-person events were suspended completely from 15 March until 15 June 2020 while none of the existing conference rooms was equipped for online conferencing with interpretation. When meeting activities resumed, seating capacity of conference rooms dropped by 80 per cent on average due to mandatory distancing measures. Within a very short time frame, the United Nations Office at Geneva managed to organize virtual and hybrid conferences. In 2020, 1,359 virtual and hybrid conferences were held.

Table 2
Number of meetings held by type

<i>Type of meeting</i>	<i>2019</i>	<i>2020</i>	<i>2021</i>
Hybrid	–	893	2 480
In-person	12 371	2 915	2 382
Virtual		466	436
Total	12 371	4 274	5 298

Source: United Nations Office at Geneva.

62. More historic buildings with conference rooms can therefore be renovated in parallel than originally planned. However, the renovation of building E cannot begin before most of the conference rooms of the historic buildings have been renovated. Within a business continuity context, capacity to facilitate side events linked to calendar sessions has also been reduced. In 2022, further difficulties arising from the limited number of rooms are expected.

63. Overall, at the time of the audit, the project had reached the key objective of ensuring business and operational continuity thus far. The specific circumstances related to the COVID-19 pandemic had also been taken into account.

Key objective (b): To meet all relevant regulations related to fire protection, health and life safety and building code compliance

64. One of the key objectives of the strategic heritage plan project is to meet all relevant regulations related to fire protection, health and life safety and building code compliance. Fire protection is one issue.

65. In Switzerland, fire protection requirements have been developed and published by the Association of Cantonal Fire Insurance Companies on behalf of the intercantonal authority responsible for technical barriers to trade. The fire protection standard, declared binding by the intercantonal authority for all cantons, not only establishes the framework for fire protection in terms of general duties, construction, fire protection equipment, organizational aspects and associated fire protection measures but also determines the applicable safety rules. The fire protection standard

is supplemented by fire protection directives, which set out the requirements and detailed measures for its implementation.

66. The fire protection concept encompasses two strategies, one for building H and another for existing buildings.

67. The strategy for building H is closely based on the Swiss code of fire protection. The role of fire engineering is to support the efforts of architects to find the most economical and flexible solutions while remaining strictly within the legal framework. Pursuant to the Swiss fire standards, the fire and safety strategy for building H requires compliance with the provisions under article 7, entitled *Entrée en occupation*, of *loi sur les constructions et les installations diverses*. After substantial progress had been made on the completion and occupancy of building H, including fire and life safety testing of the building, and furniture installation, the Geneva authorities granted an occupancy permit on 17 May 2021. This led to staff movement into the building between mid-May and mid-June 2021 to enable the commencement of the historic buildings' renovation works. The Board still perceives a need for the strategic heritage plan team to receive a final permit when the external works (related to trees) will have been finalized.

68. For existing buildings, the strategy is different. Indeed, a strict application of the guidelines of the Association of Cantonal Fire Insurance Companies would result in work and costs disproportionate to safety gain (involving, inter alia, modification or addition of stairwells, technical installations for smoke extraction, building structures) and especially insofar as most of these measures would have no chance of ensuring heritage protection. The main actions related to improving the security and safety standards within the Palais include removal of asbestos and other dangerous materials, replacement or strengthening of skylight structure and glazing and the fire compartmentalization of the building.

69. At this stage, the Board has found no indication that this key objective will not be achieved.

Key objective (c): To meet all relevant regulations relating to persons with disabilities, including provisions for accessibility and technology

70. On 4 October 2021, the substantial completion certificate for building H was signed on behalf of the United Nations Office at Geneva. Accordingly, the Board reviewed that the approach met all relevant regulations relating to persons with disabilities, including provisions for accessibility and technology for building H. The findings are presented in more detail in section D.7 below.

Key objective (d): To repair and update the building enclosure and the electrical, mechanical and plumbing systems in order to meet relevant health and safety regulations and reduce energy costs

71. In 2011, the United Nations Office at Geneva contracted a consulting engineering firm to provide essential information on the current building conditions and the objectives of the strategic heritage plan. The consulting firm stressed that one of the most important objectives of the strategic heritage plan was to improve energy efficiency. According to the report, energy consumption could be reduced by up to 25 per cent of the consumption of the existing Palais des Nations.

72. Also in 2011, the Secretary-General underlined the importance of updating the building's exterior and electromechanical systems to further reduce energy consumption. The report did not provide energy consumption calculations or the year to which the figures related. The actions, or the implementation of the strategic heritage plan, was expected to result in a reduction in energy consumption at the

Palais des Nations of approximately 25 per cent, which would generate savings of \$1.7 million per biennium (see [A/66/279](#), para. 11 (c) (iv)). Accordingly, the reduction of energy consumption is one of the key objectives of the strategic heritage plan project.

73. In his 9 September 2013 report on the strategic heritage plan of the United Nations Office at Geneva ([A/68/372](#)), the Secretary-General again stressed the reduction of energy consumption as one of the key objectives of the strategic heritage plan project and also stated that the savings in energy costs would decrease expenses by SwF 16 million over 25 years, taking into account an implementation period for the strategic heritage plan of 8 years. The base year to which the energy consumption savings related was not stated.

74. In 2015, the General Assembly approved the proposed scope, schedule and estimated cost of the strategic heritage plan in 2015. In the meantime, energy-saving measures at the Palais des Nations had already commenced, funded by a donation of SwF 50 million. The work, which was concluded in 2014, included repairs to parts of the roof and replacement windows, optimization of lighting, installation of solar panels and replacement of certain ventilation units. Pursuant to the 2013 report of the Secretary-General ([A/68/372](#)), the donation from the host country contributed to a reduction of the scope of the strategic heritage plan and lowered the overall cost of the renovation project which was subsequently approved.

75. In 2017, the Secretary-General stressed that one of the core objectives of the strategic heritage plan was to lower the energy consumption of the Palais des Nations by at least 25 per cent as compared with the 2010 baseline.

76. In 2018, the Board recommended that management consider the beginning of the implementation of the strategic heritage plan to be the baseline for the reduction of energy consumption and consider the energy savings already achieved through other energy-saving measures to be outside the scope of the strategic heritage plan ([A/73/157](#)).

77. In 2020, the Board noted that the strategic heritage plan team had, inter alia, adjusted the baseline energy consumption by considering only the main buildings of the Palais des Nations (thus excluding Motta and Wilson); determined 2015 as the baseline energy consumption year and consequently adjusted the energy savings target; and updated the calculations for building H related to the expected energy consumption ([A/75/135](#)). The strategic heritage plan team provided the Board with updated information related to energy consumption to inform it of the current status of lowering the energy use of the Palais des Nations by 15.1 per cent using the 2015 baseline. The Board noted that the review was more detailed and further refined the calculation of energy-saving measures and expected energy use.

78. In 2022, the Board reviewed the new calculations and concluded that, finally, the data provided a reliable basis for enabling the project team to predict possible energy consumption reductions.

Key objective (e): to upgrade the existing information technology networks, broadcasting facilities and conference systems in compliance with industry standards

79. At the time of the audit, while the Board found no critical risks to the achievement of the key objective, it did find some less severe ones. The risks included additional costs to integrate new information and communications technology (ICT) equipment into the existing equipment and delays in the installation and commissioning of ICT equipment. These risks were mitigated, among other actions, by contractually agreed milestones which served as status review dates. In addition,

the cost and scope of upgrading conference equipment were not clear. Risk mitigation measures included maintaining contingencies for unexpected additional costs and clarifying stakeholder requirements.

80. The COVID-19 pandemic led to greater demand for hybrid meetings, with some participants attending in person and others online in conference rooms. In order to check and illustrate the resulting requirements for renovation of the conference rooms' audiovisual equipment, two conference rooms were set up in a mock-up room. In this mock-up room, the audiovisual equipment was tested and the configuration modelled in order to replicate it later for the real conference rooms. The COVID-19 pandemic also led to supply chain-related disruptions which have had a negative impact on the availability and delivery timelines for key electronic components essential for the upgrading of the conference room technical infrastructure and thus the completion of the related works.

81. At this stage, the Board has found no indication that this key objective will not be achieved.

Key objective (f): To optimize the use of the available interior spaces and conference facilities, providing flexible and functional conference rooms

82. In section VII of its resolution [69/274 A](#) of 2 April 2015, the General Assembly requested the Secretary-General to incorporate flexible workplace strategies in the ongoing design of the strategic heritage plan and to report thereon in the context of the next report on the strategic heritage plan.

83. In its resolution [70/248 A](#) of 23 December 2015, the General Assembly approved the proposed project scope, schedule and estimated cost of the strategic heritage plan and requested the Secretary-General to ensure the application of flexible workplace strategies at the Palais des Nations.

84. In the same resolution, the General Assembly acknowledged that space optimization was one of the key objectives of the strategic heritage plan and requested the Secretary-General to ensure that the application of flexible workplace strategies at the Palais des Nations took into account the physical characteristics and the specific heritage preservation needs, as well as ongoing business transformation initiatives, in a cost-effective manner. Also in resolution [70/248 A](#), the Assembly requested the Secretary-General to continue to gather data on building occupancy utilization throughout the entire site of the Palais des Nations in order to increase space efficiencies above the 700 additional spaces already identified, including by setting optimized space utilization targets, and to report on the concrete steps taken in that regard in the context of the next progress report on the strategic heritage plan.

85. In March 2021, the incurred total expenditures of the strategic heritage plan project for implementing the flexible workplace strategies reached SwF 9.3 million. Out of the SwF 9.3 million, SwF 1.1 million (12 per cent) was incurred for specialized consultancy services; SwF 1.5 million (16 per cent) for design changes; and SwF 6.7 million (72 per cent) for required structural adjustment of building H. A further SwF 43,532 is expected to be incurred, for the most part as an outstanding commitment for the specialized consulting firm.

Building H

86. With the implementation of flexible workplace strategies in building H, management initially targeted a baseline of 1,400 workspaces in this building, 200 of which would be hot desks in order to meet peak conference demands and service meetings more effectively. Although the planned office levels were significantly

condensed, the baseline was not reached. The layout provided 1,215 temporary and permanent workstations, plus 827 seats for meetings or collaboration.

87. In the first annual progress report of the Secretary-General (A/68/372), the final capacity of the renovated Palais des Nations buildings was projected to be 3,507 occupants and workspaces. As stated in the Secretary-General's eighth annual progress report (A/76/350), with the adoption of flexible workplace strategies in building H, the total number of workspaces was reduced, to create space for the collaboration areas and support nodes which were needed for more effective flexible working conditions. However, with the application of a flexible workstation policy in building H, once the risks associated with the pandemic had subsided, the current forecast indicated that it would be possible to allocate a higher number of occupants than originally planned.

88. Based on the maximum occupant capacity of 3,648 projected in the eighth progress report of the Secretary-General (A/76/350), the most recent staffing projections resulted in an allocation of 3,422 occupants, with a potential remaining capacity for a further 226 occupants from additional tenants and new mandates of the General Assembly. Of the maximum 3,414 projected workspaces, 3,274 had been currently allocated. Those numbers would inevitably change before the end of the strategic heritage plan project as the size of individual entities based in the Palais des Nations fluctuated over the intervening years. Sufficient capacity also needed to be retained during the renovation work to cover the phased closure of individual buildings. Nonetheless, it could be predicted that the maximum overall allocated occupant capacity of the Palais compound, once the strategic heritage plan project was complete, would exceed that originally forecast, provided that the pandemic-related mitigating measures had ended.

89. The Board will further monitor the process and results.

Historic buildings of the Palais des Nations

90. For the renovation of the Palais des Nations, the contract with the construction firm had been amended in December 2020 and the pre-construction services phase was ongoing at the time of the last visit.

91. The Board will further monitor the process and results.

Key objective (g): To preserve the heritage, prevent irreversible deterioration or damage and restore and maintain the capital value of the Palais des Nations and its contents

92. The Board also reviewed the approach taken to preserve the heritage, prevent irreversible deterioration or damage and restore and maintain the capital value of the Palais des Nations and its contents. The findings are presented in more detail in section D.14 below on heritage and works of art.

3. Risk management

93. In response to the observations made in the Board's management letter for the year ended 31 December 2020, inter alia, on anomalies in the risk database and information irrelevant to recipients of monthly and quarterly risk management reports, the risk management firm developed and implemented a risk management improvement plan to provide a better service.

94. In January 2022, the Board again reviewed the risk registers and noted that:

- Anomalies in the risk database had been eliminated

- The strategic heritage plan team had reviewed and assured the quality of the independent risk management firm's records of risks, mitigation actions, risk and action owners, and their actions in the risk database
- Irrelevant and redundant information had been removed from risk registers in monthly and quarterly risk management reports

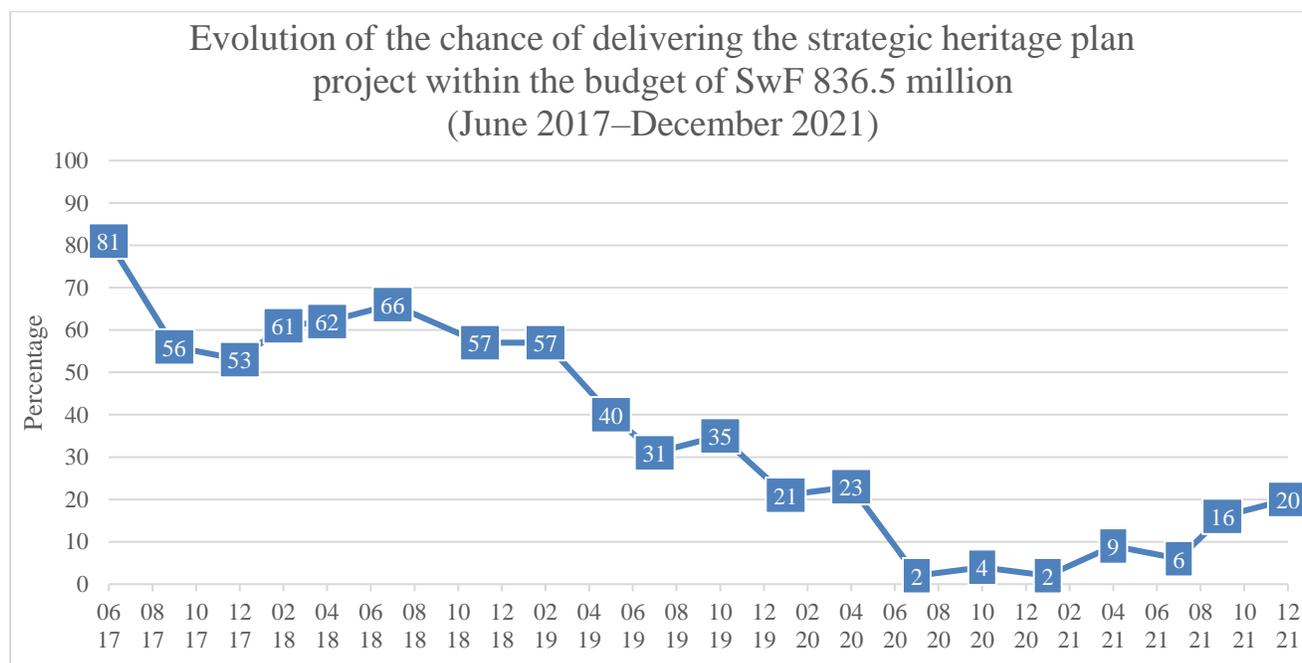
95. Pursuant to chapter 9.6.7 of the 2016 guidelines for managing construction projects issued by the Global Asset Management Policy Service within the Office of Programme Planning, Finance and Budget, a project contingency allowance should be held in reserve for risks that occur and require financial mitigation.

96. The strategic heritage plan team determines a contingency allowance as the difference between the approved budget and the sum of the up-to-date base cost estimate and escalation (budgeted contingency). In contrast, the independent risk management firm determines the contingency allowance with an iterative risk analysis based on the estimated base cost and cost of the current risks and uncertainties associated with the project and calculates the recommended level of contingency provision (on top of the base cost estimate) required to complete the full scope of the project.

97. The evolution of the confidence level for (or chance of) completing the project within the budget, according to the risk management quarterly reports issued since June 2017, is shown in figure IV.

Figure IV

Evolution of the chance of delivering the strategic heritage plan project within the budget



Source: Board of Auditors.

98. The Board noted that, since August 2018, the chance of delivering the strategic heritage plan project within the available budget had declined almost continuously, from 66 to 2 per cent in January 2021, but had since then shown an upward trend, to 20 per cent by December 2021.

99. In December 2021, risk management quarterly report No. 3 (2021/2022) indicated a 20 per cent chance of completing the project within the budget, an estimate of contingency required by the risk firm of SwF 65.28 million and a forecast overspend of SwF 28.53 million on top of the approved budget of SwF 836.5 million, compared with an estimate of contingency required by the strategic heritage plan team of SwF 55.35 million and a forecast overspend of SwF 17.33 million.

100. Risk management quarterly report No. 3 (2021/2022) included the 10 most significant cost risks to the project. The Board noted that four of those risks affected building E and five risks affected the historic buildings (A, B, C, D and S), related mainly to potential design errors and omissions discovered after the conclusion of the guaranteed maximum price for the renovation, changes to the current design as a result of stakeholder change requests and the COVID-19 pandemic, discovery of unforeseen additional works owing to the physical condition of building E discovered during the demolition of the office tower and cost growth during the technical design of the building E conference centre. One risk was related to the settlement of variations on site in the final account for building H.

101. Although the Board recognizes that the strategic heritage plan team has already been focusing on renovation risks and while since September 2021, the Board has seen a slight increase in the chance of delivering the strategic heritage plan project within the budget, the Board is of the opinion that the upward trend may not be sustainable. The Board encourages the strategic heritage plan team to continue to seek opportunities that would exert a positive impact on the strategic heritage plan project objectives and to have fallback plans in readiness if risks materialize that challenge the completion of the project within the budget.

102. The Board recommends that the strategic heritage plan team continue to seek opportunities that would exert a positive impact on the strategic heritage plan project objectives and to have fallback plans in readiness if risks materialize that challenge the completion of the project within the budget.

103. Management accepts the recommendation and is seeking continuously for ways to minimize project delays and costs.

4. Directly attributable costs

104. Pursuant to the International Public Sector Accounting Standards (IPSAS) corporate guidance for property, plant and equipment, the cost of a self-constructed asset comprises any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management. Examples of directly attributable costs are:

- Costs of employee benefits arising directly from the construction of the item
- Costs of site preparation
- Initial delivery and handling costs
- Installation and assembly costs
- Professional fees

105. “Assets under construction” is a term used to refer to non-current assets that are still under development or construction but capitalized and expected to provide value to the Organization for more than one financial year. Over the construction period, the costs allocated to assets under construction are periodically capitalized. Once the final asset is completed, those costs are transferred to the final asset.

106. In 2019, the strategic heritage plan team instructed the contractor for building H to abate asbestos in areas affected by building H such as the building E underground

car park. The strategic heritage plan team allocated the costs to assets under construction.

107. In 2020, the Board recommended that the United Nations Office at Geneva capitalize all directly attributable costs such as those for asbestos abatement. The Office accepted the recommendation, stating that the treatment of asbestos abatement costs had been consistent over the years. Those costs were treated as expenses based on the guidance received from Headquarters.

108. In 2021, the Board noted that the strategic heritage plan team had estimated total costs of SwF 15 million for the abatement of asbestos in the heritage buildings of the Palais des Nations and building E. According to the monthly reports, the abatement process for the heritage buildings of the Palais des Nations had started in February 2021. Since then, the strategic heritage plan team has allocated approximately SwF 4.5 million to assets under construction. The strategic heritage plan team stated that this approach was in line with industry best practice and had also been recommended by the quantity surveyor.

109. The Board is of the view that the abatement of asbestos improves the buildings' safety compared with the safety of the building in its original condition since asbestos contamination had existed prior to the strategic heritage plan renovation works. Through the abatement and removal of asbestos, the United Nations Office at Geneva will eliminate an existing problem and prevent any further contamination from asbestos. Dismantling and removal therefore extend the life and improve the safety and efficiency of the property as well as improve the condition of the property compared with its condition prior to the strategic heritage plan renovation works.

110. The Board recommends that the strategic heritage plan team allocate all costs for the abatement of asbestos to assets under construction and liaise with the United Nations Office at Geneva on the accounting treatment for transferring these costs to the final asset.

111. Management accepts the recommendation. In 2020, the United Nations Office at Geneva clarified the accounting treatment for the costs of asbestos removal with United Nations Headquarters. It was agreed that those costs would be capitalized as assets under construction as at 31 December 2021. To implement the recommendation, the accounting treatment will need to be formalized as part of the standard operating procedure on the accounting methodology for the renovation project.

5. Substantial completion of building H

112. The United Nations Office at Geneva defined roles and responsibilities extending from the handover of each individual section of the contractor's works up to the issuance of the substantial completion certificate and the final completion certificate.

113. Substantial completion is a construction milestone which represents the stage at which the execution of the whole of the construction works or the relevant sections or part of the works are complete, except for minor omissions and minor defects. Such minor omissions and minor defects are listed in a punch list. Substantial completion signifies, inter alia, that all mechanical and electrical systems have been successfully tested and as-built documentation (including operation and maintenance manuals) provided by the contractor is available. Substantial completion will be confirmed by the strategic heritage plan team.

114. After substantial completion, the building and related documentation will be transferred to the United Nations Office at Geneva services in charge of operation and maintenance. At the date of transfer, the Office will become responsible for operating and maintaining the building, with the processing of the punch list remaining under the responsibility of the strategic heritage plan team. The transfer will be confirmed

by the signature of the strategic heritage plan team and the Office services in charge of operation and maintenance. After completion of all pending works including the defects noted in the punch list, the strategic heritage plan team will confirm final completion.

115. In early 2021, the strategic heritage plan team together with the contractor began the commissioning process for building H with the first pre-functional tests for the mechanical and electrical systems. Commissioning is a systematic process for ensuring that all building systems including the mechanical and electrical systems that have been functionally tested are working as designed and are capable of being operated and maintained. Since then, tests have been carried out continuously and pending works and defects have been documented in the punch list. In addition, regular meetings were held during the process.

116. At the end of September 2021, the strategic heritage plan team decided that the execution of the construction work for building H had reached the substantial completion stage, excluding minor pending works documented in the punch list.

117. On 4 October 2021, the substantial completion certificate was signed on behalf of the United Nations Office at Geneva.

118. The substantial completion certificate describes precisely the pending works and tests that still need to be carried out by the contractor and the defects that still need to be repaired. For instance:

- Functional tests for the business management system of building H have not been completed. The parties agreed on a clear definition of the roles and responsibilities of the contractor up until the takeover of the building management system
- Functional tests for lighting, blinds, emergency lighting, ventilation, heating, cooling, the transformer room, electricity and ICT systems have been carried out. However, follow-up tests for parts of the systems still have to be completed
- No complete as-built documents for the mechanical and electrical systems have been submitted
- At least one training session has been delivered for 23 mechanical and electrical systems but not for lighting/KNX, photovoltaic, smoke extraction, rolling shutters, the business management system, the lift monitoring system and gardening

119. The strategic heritage plan team agreed with the contractor that the contractor would be responsible for the proper functioning (operation and maintenance) of the few technical systems that had not yet been finally tested or approved. This agreement is to be in effect until the submission of both the minimum as-built documentation required to operate and maintain the building and the past performance test reports.

120. On the same day, the strategic heritage plan team transferred building H to the United Nations Office at Geneva services in charge of operation and maintenance by signing the transfer form. From that day forward, the United Nations Office at Geneva was responsible for operating and maintaining building H except for the few technical systems that have not yet been finally tested or approved.

121. Without the above-mentioned tests, approvals and as-built documents, the United Nations Office at Geneva services in charge of operation and maintenance or the contractor might not be able to operate the building under all circumstances.

122. The Board is concerned that in the event of a breakdown in building H the responsibilities will not be clear until all items in the punch list are completely processed. Furthermore, the Board perceives a risk of the contractor's no longer

having a particular interest in completing the pending works and tests and repairing the pending defects expeditiously. This situation carries some risk of disputes and additional costs.

123. The Board recommends that the strategic heritage plan team ensure that the works, tests and defects noted on the punch list are addressed as expeditiously as possible.

124. Management accepts the recommendation and confirms that works are already ongoing to ensure that the punch list works are concluded as expeditiously as possible. By April 2022, more than 70 per cent of the items on the punch list have already been cleared. Regarding the risk that the contractor may no longer have a particular interest in completing the pending works and tests and repairing the pending defects expeditiously, management wishes to recall that in addition to exiting contractual safeguards to mitigate the identified risk, a part of the application for payment has been out on hold. The release of the related amounts are linked to the finalization by the contractor of items on the punch list. Furthermore, as maintaining resources from the contractor on site has a direct cost for the contractor, it is therefore in the contractor's interest to complete the tasks expeditiously.

125. The Board recommends that the strategic heritage plan team closely supervise the operation and maintenance carried out by the contractor with respect to the systems not yet finally accepted, as indicated on the punch list, until those systems are fully approved by the strategic heritage plan team and are then able to be operated and maintained by the United Nations Office at Geneva.

126. Management accepts the recommendations and confirms that the strategic heritage plan team remains fully involved in supervising the works and their completion, alongside colleagues in the Facility Management Section, with the aim of bringing the pending matters to a satisfactory conclusion.

6. Need for functional testing of solar panels

127. In September 2019, the Secretary-General stated, in his sixth annual progress report on the Strategic Heritage Plan of the United Nations Office at Geneva, that the project would also yield important sustainability benefits, including an increase in electricity generation from solar panels.

128. In accordance with the contract for building H, the contractor was obliged to install approximately 270 square metres of solar panels with a minimum power of 50 kilowatt peak at a contract price of SwF 105,000. The strategic heritage plan team stated upon request that the solar panels on the roof of building H had been installed in March 2021. On 4 October 2021, the United Nations Office at Geneva issued the substantial completion certificate for building H. According to the punch list, functional testing of the solar panels still needs to be conducted by the contractor and consequently the system has not yet been handed over.

129. On 29 September 2021, the strategic heritage plan team sent the contractor a request for a variation proposal with the purpose of amending the technical installation for the solar panels. In the request, the team indicated that it was necessary to install solar panel metering of network injection, monitoring and control feedback for the solar panels, a connection and interface for reporting energy production, and inverter alarms and defaults. The strategic heritage plan team stated that the solar panel metering was not included in the initial work of the contractor and the team therefore issued the variation request to correct the omission.

130. In January 2022, the strategic heritage plan team stated upon request that the solar panel installation had not yet been commissioned and therefore it had not yet

been transferred from the contractor to the United Nations Office at Geneva on the substantial completion certificate. Furthermore, staff had not yet received instruction and training related to the installation.

131. The Board noted that:

- There were 152 solar panels corresponding to an area of 267.5 square metres and 50.16 kilowatt peak installed
- The solar panels had not yet been commissioned, the functional test had not been carried out and staff members had not received instruction and training
- The solar panels had been installed in March 2021 and the substantial completion for the new permanent building was signed in October 2021. However, in March 2022, the strategic heritage plan team could not confirm when the variation work for the solar panels would be completed and when they would start to produce energy

132. Although the strategic heritage plan team had issued on 29 September 2021 a request to the contractor for variation to install the lacking equipment, the United Nations Office at Geneva and the contractor did not provide a quotation until March 2022.

133. The Board holds that the strategic heritage plan team and the contractor should reach a technical and a financial agreement regarding the open request for variation so that the solar panel installation can be finalized and produce electricity as soon as possible.

134. The Board recommends that the strategic heritage plan team takes the necessary steps to reach an agreement with the contractor for building H so that the solar panels can produce electricity as soon as possible.

135. Management accepts the recommendation and is actively working with the building H contractor to finalize and close the items open since the substantial completion. This includes finalizing the agreement on the variation for the solar panels as soon as possible so that the works can be finalized, commissioned and ready to produce electricity.

7. Building H accessibility

136. A policy on employment and accessibility for staff members with disabilities in the United Nations Secretariat entered into force in June 2014 (see Secretary-General's bulletin [ST/SGB/2014/3](#)). As the United Nations Office at Geneva is an integral part of the United Nations Secretariat, it must comply with the policy.

137. The objectives of the policy are:

(a) To ensure that staff members with disabilities have access to physical facilities, conferences and services, documentation and information, and professional development;

(b) To create a non-discriminatory and inclusive workplace with non-discriminatory recruitment and employment conditions and equal access to continuous learning, professional training opportunities and career advancement;

(c) To ensure that reasonable accommodation is provided;

(d) To improve accessibility and full inclusion;

(e) To improve and share knowledge and information about good practices on inclusive work environments within the United Nations system.

138. In its resolutions [69/262](#), [70/248 A](#) and [72/262 A](#), the General Assembly requested the Secretary-General to ensure that the implementation of the strategic heritage plan took into account measures to eliminate physical, communications and technical barriers faced by persons with disabilities, with full respect for the provisions of the Convention on the Rights of Persons with Disabilities. In this regard, the Secretary-General confirmed that meeting all relevant host country regulations relating to persons with disabilities, including provisions for accessibility and technology, was also one of the key objectives of the strategic heritage plan.

139. In its resolution [71/272 A](#), the General Assembly welcomed the development of an indoor accessibility master plan and requested the Secretary-General to continue to ensure that the implementation of the strategic heritage plan took into account measures to eliminate physical, communications and technical barriers faced by persons with disabilities, taking into account in that regard relevant resolutions adopted by the Assembly, while ensuring compliance with the Convention on the Rights of Persons with Disabilities.

140. In his second annual progress report on the strategic heritage plan of the United Nations Office at Geneva ([A/70/394](#)), the Secretary-General stated that Swiss code would be used as the baseline guidance for design but would be augmented with additional guidance from international codes and standards where they might represent better practice.

141. The minimum standards recommended for the strategic heritage plan include the Swiss Federal Law on the elimination of inequalities that affect persons with disabilities and the SIA 500 standard of the Swiss Society of Engineers and Architects on buildings without barriers.

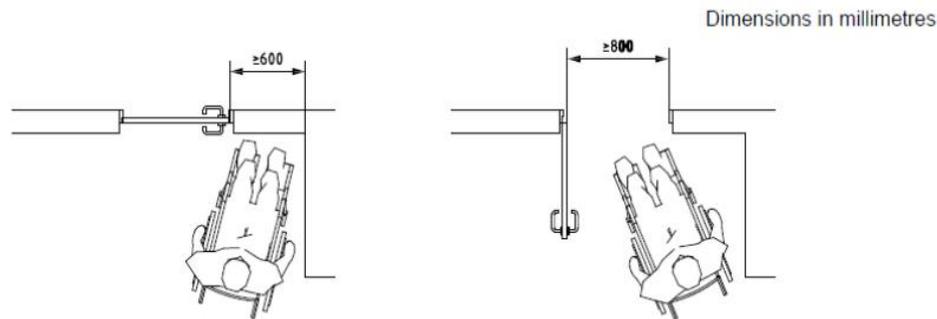
Necessary space for people with mobility impairments

142. In his eighth annual progress report on the strategic heritage plan of the United Nations Office at Geneva ([A/76/350](#)), the Secretary-General stated that building H, which was designed in accordance with the aforementioned standards, had been completed and occupied.

143. Building H has internal circulation routes, an entrance lobby and exterior pathways which enhance mobility of persons with disabilities. Building H is also equipped with various accessible features such as up-to-date types of elevators and networks of guiding strips for persons with a visual impairment. Building H is part of collective commitments towards achieving transformative and lasting change for persons with disabilities at the Palais des Nations and its compounds.

144. Pursuant to International Standard ISO 21542 entitled “Building construction – Accessibility and usability of the built environment” and the SIA 500 standard on buildings without barriers, a manoeuvring space of not less than 600 millimetres shall be provided between the leading edge of a door and a wall that is perpendicular to the doorway. This space is necessary to enable a person who uses a wheelchair or a walking frame (see figure V) to open the door. The minimum unobstructed width of a doorway on a continuously accessible path shall be 800 millimetres when measured from the face of the door. However, a width of 850 millimetres or more are recommended.

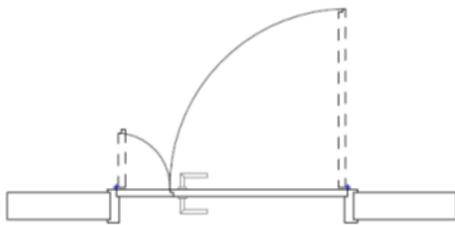
Figure V
Requirements for manoeuvring space



Source: ISO 21542, sect. 18.1.2 (Unobstructed width of doorways).

145. In February 2017, the Board reviewed the drawings from the lead design firm for the new permanent building H. The design firm planned unequal door types, a door leaf and a half-width door (see figure VI) in the corridors close to the accessible bathrooms. This solution should provide sufficient space for persons with a mobility impairment, as a possible wheelchair user could use the small doors for providing (additional) manoeuvring space.

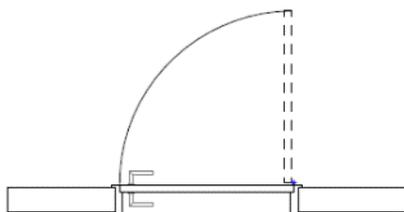
Figure VI
Unequal door



Source: Design firm, A5-8.10.423 (Door type schedule 1).

146. In November 2021, the Board noted that the contractor had installed single door types (see figure VII) in the corridors and staircases instead of the initially planned unequal door types. In addition, the full width of the doors were about 1,300 millimetres instead of 800 or 850 millimetres as described in the accessibility standards, which means that a disabled person would have a door with a sufficient width to “drive” through but still not enough surrounding room as manoeuvring space to open the doors close to the accessible bathrooms.

Figure VII
Single door



Source: Design firm, A5-8.10.423 (Door type schedule 1).

147. The Board surveyed all levels of building H and found that there were at least 11 doors which did not comply with the relevant accessibility standards. In six cases, the Board measured a manoeuvring space of 130 to 160 millimetres and in other cases a space of up to 350 millimetres instead of the required 600 millimetres.

148. According to the contractor's offer, the unequal doors costed between SwF 3,400 and SwF 3,700 compared to the single door types between SwF 1,950 and SwF 2,200. The Board calculated that the single door types could be 40 per cent cheaper than the solution agreed in the contract. From the documents available, the Board could not evaluate whether the strategic heritage plan team had agreed to the changes from the contractor resulting in the accessibility issues described. Given that, the Board is of the view that this raises questions regarding the effectiveness of related controls.

149. Moreover, the Board holds that the strategic heritage plan team should improve the access to the accessible bathrooms as soon as possible.

150. The Board recommends that the strategic heritage plan team analyse the reasons for and the circumstances associated with how these mistakes could have occurred.

151. The Board also recommends that the strategic heritage plan team install a clear set of instructions and enhance the monitoring of its inclusion strategy.

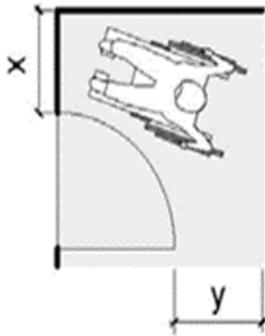
152. The Board further recommends that the strategic heritage plan team examine the contractor's invoices to determine whether the contractor was overpaid.

153. Management accepts the recommendations and would like to stress that the United Nations Office at Geneva is committed to the United Nations Disability Inclusion Strategy and the strategic heritage plan is a component of its action plan on the disability inclusion strategy. In that regard, management confirmed that it will address the issues raised with both the design firm and their accessibility consultant and with the contractor to investigate how this situation has occurred and what actions now need to be taken to address it. The review will have the aim of determining whether, in fact, there was insufficient monitoring during the construction process and the substantial completion process and, if so, how internal controls can be strengthened to prevent such occurrences in the future. In this context, management notes that this observation relates to a total of 11 doors out of an approximate total of 350 doors in the new building H, which is just over 3 per cent. While management assures that the value of the contractor's works performed under the contract will have been measured and paid for in accordance with the contract, it will further investigate this matter. Should the payment to the contractor need adjustment, such adjustment is possible under the contract up to the issuance of the final completion certificate. The final completion certificate is due to be issued in October 2023 at the expiration of the two-year defects period following substantial completion.

Sufficient manoeuvring space in level 1 of the new permanent building H

154. Under the SIA 500 standard, accessible doors are requested in buildings. On every accessible path, doorways should provide sufficient circulation space in both directions. A person in a wheelchair has to be able to access the corridors to the bathrooms (hence manoeuvring space has to be sufficient and doors need to be easy to open). The door width must be a minimum of 800 millimetres, the lock and handle must be easy to grasp and sufficient lighting is needed. There must be a space of 600 millimetres next to the door (dimension X in figure VIII below). Moreover, the space behind the door swing has to be an additional 1,200 millimetres (dimension Y in figure VIII below).

Figure VIII
Corridor with sufficient manoeuvring space

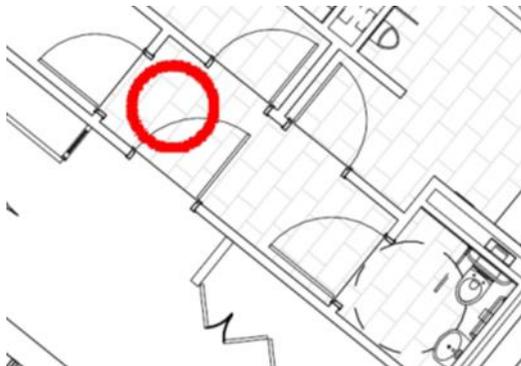


Source: SIA 500 standard, para. 9.2.3.

155. In its accessibility report, the design firm stated that accessible bathrooms were conveniently located in each core on every level of building H. Furthermore, building H was designed for fully inclusive access, as existing spatial constraints do not have to be considered.

156. In February 2017, the Board reviewed the drawings from the lead design firm for building H and noted that sufficient manoeuvring space had been lacking in a corridor close to an accessible bathroom at level 1 (see figure IX).

Figure IX
Corridor with insufficient manoeuvring space



Source: Design firm, A5-0.01.401 (Level 01 key plan).

157. In March 2017, the Board recommended that doorways provide sufficient circulation space. The strategic heritage plan team accepted the recommendation and stated that the door into the corridor would be handed the other way, meaning that the hinges would be shifted to the opposite side to change the swing of the door.

158. In November 2018, the Board again reviewed the final drawing for level 1 of building H and the related door schedule and noted that the design firm had not improved the access to the corridor by changing the swing of the door to enable it to open the other way. Once again, the Board recommended that the swing of the door be changed.

159. In March 2019, the strategic heritage plan team stated that it would address this oversight and bring the design into full compliance with the accessibility framework. Furthermore, the strategic heritage plan team stated that these minimal modifications

could be implemented without delay to the work, as the interior fit-out is not planned to begin for several months.

160. In November 2021, the Board noted that the door had not been modified. Only a reduced manoeuvring space was realized which is a technical barrier for wheelchair users in building H.

161. The Board recommends that the strategic heritage plan team improve access into the corridor close to an accessible bathroom and bring the manoeuvring space into full compliance with the accessibility framework.

162. The Board also recommends that the strategic heritage plan team review why changes in this area have been inadequately implemented so as to enable understanding and application of lessons learned.

163. Management accepts the two recommendations and confirms that the drawings were amended in 2018 and the building permit drawings as submitted and approved show the door opening in the proper direction. Management is further investigating how this door was incorrectly installed during the construction process. This is one of the items included on the defect list of the Building H contract for the contractor to resolve. The clearance of the defects list for Building H is currently in progress with the contractor and this item will be addressed and corrected.

Inclusive and accessible workspace for staff members with disabilities

164. According to the *World Report on Disability*², there are more than 1 billion disabled people in the world. This figure corresponds to about 15 per cent of the world's population. A total of 253 million people, representing 3.2 per cent of the world's population, are affected by some form of blindness or other forms of visual impairment. Given the maximum occupant capacity of 3,648 staff members at the campus of the United Nations Office at Geneva, 117 staff members might be affected by some form of blindness or other forms of visual impairment.

165. In his third annual progress report on the strategic heritage plan of the United Nations Office at Geneva, the Secretary-General stated that an exhaustive analysis had been provided by a Swiss consultancy agency (in the area of barrier-free architecture) which included an implementation plan for outdoor and indoor accessibility. The Swiss consultancy agency promotes disability-friendly constructions in Switzerland and develops basic principles and publishes guidelines, fact sheets and planning aids.

166. Besides the aforementioned SIA 500 standard, the relevant international standard in this regard is ISO 21542 "Building construction – Accessibility and usability of the built environment", as noted above, which sets out objectives, design considerations, requirements and recommendations for the realization of accessible and usable buildings. These principles are fully supported by articles 9, 10 and 11 of the Convention on the Rights of Persons with Disabilities.

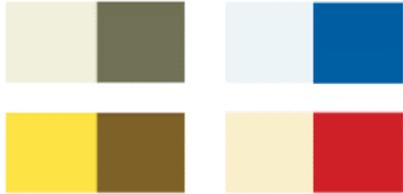
167. For persons with vision impairments, the main distinguishing feature of a surface is often the amount of light reflected by a particular surface or colour which is known as its light reflectance value. A minimum difference in light reflectance value would be provided in relation to a visual task. Light reflectance value differences are used to assess the degree of visual contrast between surfaces such as floors, walls, doors and ceilings. Pursuant to International Standard ISO 21542, one of the two surfaces should have a light reflectance value of a minimum of 30 points for door furniture, 40 points for large area surfaces and 70 points for potential hazards. Pursuant to paragraph 4.3.1 of the SIA 500 standard related to buildings without

² Geneva, WHO, 2011.

barriers, one of the two surfaces should have a light reflectance value of a minimum of 60 points for potential hazards (see figure X).

Figure X

Approximate examples of contrasting colours for potential hazards: difference on the light reflectance value scale ≥ 60 points

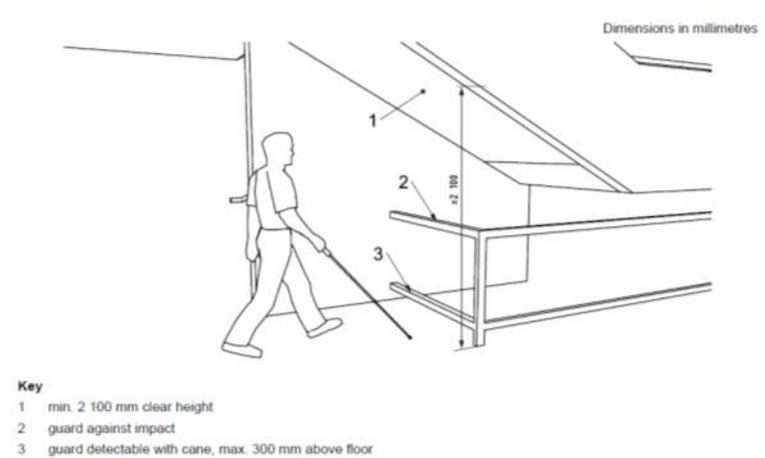


Source: International Standard ISO 21542, sect. 35 (Visual contrast), table 5 (Minimum difference in LRV).

168. Pursuant to International Standard ISO 21542 and the guidelines of the aforementioned Swiss consultancy agency, a clear accessible height under stairs shall be a minimum of 2.1 metres or more. If the clear height is less than 2.1 metres, guards or other element shall be provided to shield against impact (see figure XI).

Figure XI

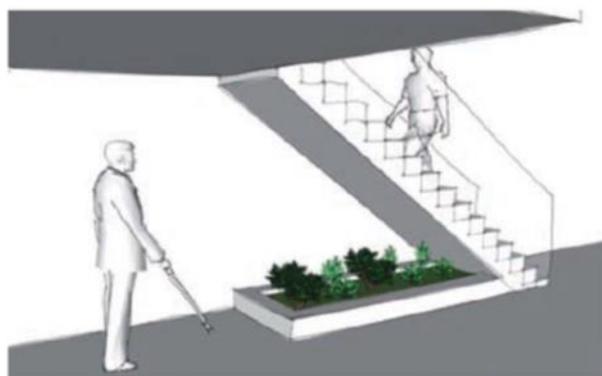
Clear height under stairs



Source: International Standard ISO 21542, sect. 13.4 (Head clearance).

169. In its accessibility report, the design firm stated that for stairs in building H, a secure cantilevered setting up to a height of 2.2 metres was necessary to prevent persons affected by some form of visual impairment from hitting their head (see figure XII).

Figure XII
Clear height under stairs



Source: Design firm accessibility report, April 2018.

170. The Board examined the drawings provided by the design firm and noted granite stone tiles which were 30 millimetres higher than the office floor under all staircase surfaces. In addition, the design firm had planned a fire sprinkler system to protect against fire for the building, except for technical rooms, bathrooms and escape routes. However, the design firm had not provided for sprinklers near and under the wooden stairs in the open office spaces.

171. In April 2019, during a meeting of the strategic heritage plan team, the design firm, its security consultant and the contractor for building H, the participants considered it necessary to change the position and quantity of the smoke detectors and sprinkler heads so that they were in compliance with fire-related requirements. The security consultant stated that the wooden stairs were not protected against fire and that a sprinkler protection must be present under the stairs. The security consultant added that a sprinkler protection would not be required under the stairs if the granite stone tiles were 50 millimetres in height rather than 30 millimetres as stipulated in the contract. In addition, the “prohibited storage” signs should be screwed to or engraved on the floor.

172. In October 2019, the strategic heritage plan team sent a request for variation to the contractor for installation of additional smoke detectors, sprinkler heads and the signs. In January 2020, the strategic heritage plan team and the contractor signed an agreement on a sum of approximately SwF 198,000, with the cost of the signs amounting to approximately SwF 15,450. Necessary measures were not taken to protect persons affected by visually impairments from falling over the granite tiles which were 50 millimetre in height.

173. In November 2021, the Board examined building H and found granite stone tiles under landscape stairs. However, the Board did not find guards or other elements as planned by the design firm in 2018. Furthermore, the construction did not comply with the International Standard regarding the contrasting colours of the surfaces.

174. The Board noted that the light reflectance value between the grey granite and the grey carpet was very low. In the Board’s view, the visual contrast between the two surfaces was not in compliance with the ISO International Standard and the SIA 500 standard on buildings without barriers. Pursuant to the International Standard and the SIA 500 standard, contrasting colours for potential hazards must have a light reflectance value of 60 or 70 points.

175. The strategic heritage plan team stated that neither the accessibility working group nor the design firm had calculated the light reflectance value before the

contractor carried out the work. Using a free light reflectance value calculator available on the Web, the audit team noted that the light reflectance value between the grey granite and the grey carpet could lie between 20 and 40 points, which would signify that the visual contrast between the two surfaces did not comply with the standards for preventing persons affected by visual impairments from falling over the tiles with a height of 50 millimetres.

176. Additionally, the Board noted that the granite stone tiles under the landscape stairs could become a trip hazard and hinder the evacuation process in cases where the two closest landscape stairs would be used in emergencies.

177. In the Board's view, all channels of horizontal circulation, including corridors, should be designed to facilitate ease of movement for all people. Good visual contrast of walls, floors, doors and signage is one of the main considerations.

178. The United Nations Office at Geneva stated that the granite stone tiles beneath the landscape stairs were not provided solely to prevent persons with a visual impairment from hitting their head against the stairs above. The stone base below the stairs was also required by a subconsultant of the design firm (Swiss Safety Centre) to avoid having to integrate a sprinkler system into the landscape stair assembly. The material below the stairs and the upstand with a height of 50 millimetres also delineate a zone where no material can be stored, including non-flammable material such as plants.

179. The Board has concerns about a construction which obviously poses dangers for visitors and staff members, is a barrier for people affected by vision impairments and is not in line with the SIA 500 standard. The design firm had deviated from its duty to eliminate physical barriers to persons with disabilities and had realized a design that was inappropriate. The Board is therefore of the view that the design has considerable shortcomings.

180. The Board recommends that the strategic heritage plan team, in liaison with the Swiss consultancy agency, realize a disability-friendly construction under all staircase surfaces.

181. Management accepts the recommendation but wishes to reconfirm that the building has been assessed by the relevant authorities as being compliant with Swiss building codes through the issuance of the occupancy permit for the premises. Management is fully committed to realizing a disability-friendly element under the staircases and, to this end, is currently reviewing and assessing options for further improving the situation, either through the choice of a sealant colour for the stone and/or through a proposal to change the colour of the 50 millimetre vertical upstand strip by applying a paint colour that contrasts to a greater extent with the grey carpet than the current element so as to ensure further improved assistance to persons affected by a visual impairment.

Awareness on accessibility

182. The design firm stated that embossed Braille and other forms of tactile information would be placed at each end of the handrail based on the accessibility criteria of the SIA 500 standard.

183. In 2021, the Board noted that embossed Braille and other forms of tactile information at each end of the handrails were completely missing in building H. The Board reviewed the punch list for accessible topics which had been signed after the substantial completion certificate and found that the missing embossed Braille for the handrails had not been listed.

184. Moreover, lighting should not produce glare or excessive contrast. Discomfort glare is commonly caused by light sources and reflections that are not well shielded. The difficulty experienced by persons affected by visually impairment in distinguishing reflections from real objects may lead to misidentifications that put those persons at risk.

185. In 2021, the Board noted that in-ground luminaires were installed in front of the elevators and in the town hall lobby. In the Board's view, those luminaires produce glare which could pose a risk in the vicinity of information signs or other items.

186. The Board recommends that the strategic heritage plan team eliminate the described physical and technical barriers faced by persons with disabilities as soon as possible.

187. Management accepts the recommendation and confirms that the two items have been added to the defects punch list so that the contractor can resolve the issues concerned.

8. Variation procedure

188. In almost all construction projects, the works as described in the contract need to be altered to some extent during the project. Such alterations to the original planning (including additions, substitutions and omissions) are called variations. Variations can be necessitated by unexpected conditions, new user requirements or other factors. Most contracts for medium or large construction works therefore incorporate contractual mechanisms designed to manage variations in an effective and timely manner to the mutual benefit of all parties to the contract.

189. The contracts for the construction of building H and the renovation of the historic buildings were developed based on the International Federation of Consulting Engineers Red Book which is an international standard for construction contracts. Pursuant to the standard terms of the Red Book, the employer may instruct variations at any time prior to issuing the taking-over certificate for the works. In principle, the contractor shall execute and be bound by variations that are instructed by the employer. Therefore, the contractor's obligation to execute the variation is not necessarily subject to an agreement on how the variation will eventually impact the contract price or the time for completion.

190. Deviating from the terms of the original Red Book, the contracts for the construction of building H and the renovation of the historic buildings stipulate that no instruction to execute a variation shall be executed by the contractor until an agreement has been reached or a determination has been made as to its effects on the contract price and the time for completion. A determination in this regard requires, inter alia, that a period of a minimum of 42 days has expired. In the case where the contractor disagrees with the employer's determination, it may take even longer for the determination to be contractually binding and for the contractor to be able to proceed without being at financial risk.

191. Both the building H works and the historic buildings' renovation works entail a significant number of variations. Quite often, it has taken several months for an agreement on the cost and time impacts of the variations or a binding determination to be reached.

192. The Board is of the opinion that variation processes should be conducted and completed as fast as possible to ensure the timely progress of the works and that a contractor cannot seek to deliberately take advantage of the variation process to justify entitlement to extensions of time for even relatively minor variations, potentially to cover for other culpable delays.

193. In many cases, however, a full evaluation of and negotiations on all cost and time impacts of a variation take time as a result, for example, of the fact that those impacts may depend on variables that were unknown when the need for a variation became apparent. In such cases, the risks associated with the late execution of a variation may outweigh the risks associated with some uncertainty regarding the exact cost and time impacts at the time of the execution of the variation. A fast execution is often preferable especially where the variation is technically necessary and unavoidable. Hence, it can be highly disadvantageous to the contractor for the execution of a variation to require, contrary to industry practice under standard construction contracts such as those developed by the International Federation of Consulting Engineers, a prior agreement or binding determination on all cost and time impacts.

194. Moreover, such a contractual requirement enables the contractor to delay the execution of variations by negotiating cost and time impacts. This weakens the bargaining position of the United Nations, as such delays may have a severe impact on the project.

195. The Board sees no compelling reason why an agreement or a binding determination on all cost and time impacts must be reached before each execution of a variation.

196. The Board recommends that the United Nations Office at Geneva consider whether the upcoming building E works contract should stipulate a right of the employer to instruct and confirm variations that are not subject to a prior agreement with the contractor on the cost and time impacts in order to improve the timely delivery of the works.

197. Management accepts the recommendation. The United Nations Office at Geneva agrees that the variation process should be conducted as fast as possible to ensure timely progress of the works. To this effort, based on the lessons learned from the construction management for building H, the United Nations Office at Geneva worked in consultation with the Office of Legal Affairs and an expert consultant from the International Federation of Consulting Engineers to develop an expedited variation process. The process is to allow for some flexibility in those instances where the United Nations Office at Geneva determines that the risks associated with a late execution of a particular variation may outweigh the risks associated with some uncertainty regarding the exact cost and time impacts at the time of the execution of that variation. As a result, both the contract for the renovation works with respect to the historic buildings and the form of construction contract to be used for building E include a provision for an expedited variation process (i.e. in addition to the normal variation process). Throughout the expedited variation process, the United Nations may require the construction contractor to proceed with variations, up to a specified aggregate dollar amount, without the parties' having agreed in advance on all of the terms including on scope, price and time. Management is of the opinion that a full implementation of the unmodified standard model on variations of the International Federation of Consulting Engineers is incompatible not only with the unique status and requirements of the United Nations Secretariat as an international intergovernmental organization but also with the policies and standard practices of the Organization as reflected in the United Nations General Conditions of Contract and the Financial Regulations and Rules of the United Nations. For example, significant changes have been made to the form of the International Federation of Consulting Engineers with respect to the role of the engineer as an agent for the owner, dispute resolution, limitations on liability, advance payment, governing law and, as noted, the variations process. Regarding the departures from that form that have been made with respect to variations, the United Nations office at Geneva is mindful that the lack of definitiveness on scope, time and cost of variations exposes the United Nations to a

significant risk of cost overruns and claims. Accordingly, the Office has adopted a process whereby, with the exception of variations with a capped monetary amount under the expedited process, the United Nations and the construction contractor are to agree in writing upon all central elements of variations prior to any such variations' being deemed binding under the contract. The Office understands that this process is consistent with the past practice of the United Nations with respect to the capital master plan at United Nations Headquarters in New York and courthouse construction for the International Residual Mechanism for Criminal Tribunals in Arusha as well as the current practice of the United Nations with respect to the substantial United Nations construction projects currently under way in Bangkok and Addis Ababa.

9. Delay damages for building H

198. Pursuant to the construction contract for building H, the United Nations shall be entitled to claim delay damages from the contractor if the contractor fails to meet certain completion dates. The delay damages shall be paid for every day which elapses between the contractual time and the date of actual substantial completion as stated in the substantial completion certificate. The maximum amount of delay damages was limited to 10 per cent of the contract price, that is to say, about SwF 10 million based on the initial contract price of about SwF 100 million.

199. The works for building H required several variations and delays, and the contractor issued a notice of force majeure in relation to the site closure and delays attributable to the COVID-19 pandemic. To avoid and settle any potential disputes over these various claims and the force majeure effects of the COVID-19 pandemic up to that point in time, the United Nations Office at Geneva and the contractor agreed on an amendment to the construction contract on 29 January 2021. Pursuant to this agreement, the contractor agreed to hand over levels 1 to 4 of building H (section 3.A) by 22 March 2021. The agreed contractual date for the handover of levels 5 and 6 of building H (section 3.B) was 19 April 2021. The provisions on delay damages were adjusted accordingly. The adjusted provisions shall apply in the case where the contractor fails to meet the modified completion dates of the amendment to the contract. The delay damages were apportioned to the revised section 3.A at SwF 31,506 per day and to section 3.B at SwF 12,994 per day.

200. On 3 May 2021, the contractor notified the United Nations Office at Geneva that the substantial completion of sections 3.A and 3.B should be achieved on 12 May 2021, subject to the final inspection and delivery of a permit to occupy building H by the fire and cantonal authorities on 11 May 2021. The United Nations Office at Geneva notified the contractor, however, that substantial completion of those sections had not been achieved by 12 May 2021. The United Nations Office at Geneva documented the significant works, tests, commissioning and training that remained outstanding, including, for example, on the business management system.

201. To avoid further delays to the overall project and the significant costs that would be involved in delaying the subsequent historic buildings' renovation works, management decided to take early occupation as allowed for in the contract and use building H prior to its substantial completion. On 17 May 2021, the United Nations Office at Geneva and the contractor concluded an agreement on the terms of temporary use and occupancy of building H, in which they referred to clause 10.2 (b) of the construction contract. This clause stipulates that use of any part of the site by the employer as a temporary measure, which is agreed by both parties, or for reasons attributable to the acts, omissions, breaches or defaults of the contractor, will not lead to a takeover by the employer. Subsequently, several services of various United Nations organizations moved into building H progressively over the period starting in the second half of May 2021 and extending through to the end of June 2021.

202. Parallel to the temporary use and occupancy, the contractor executed remaining works, performed functional tests and trainings and delivered documentation. On 4 October 2021, the United Nations Office at Geneva assessed that building H was sufficiently completed in accordance with the contract and issued the substantial completion certificate. Attached to the certificate was a punch list containing a considerable number of omissions, pending works and defects that are yet to be completed or remedied.

203. The substantial completion certificate of 4 October 2021 was issued 196 days after the contractual completion date for section 3.A of building H agreed in the contract amendment of 29 January 2021, which had been 22 March 2021.

204. Regarding section 3.B, the substantial completion certificate was issued 168 days after the contractual completion date agreed in the contract amendment, which had been 19 April 2021.

205. Based on the foregoing, and subject to further legal analysis and review, the United Nations Office at Geneva will need to consider whether to seek an amount of delay damages, taking into account the factual considerations for delays in the substantial completion of sections 3.A and 3.B and the resolution of pending variations, claims and extension of time request issues which have arisen in the period between the agreement on the contract amendment in January 2021 and the issuance of the substantial completion certificate in October 2021.

206. The Board recommends that the United Nations Office at Geneva examine whether and to what extent delay damages may be asserted due to the delays in the substantial completion of sections 3.A and 3.B of building H where they are attributable to the contractor.

207. Management accepts the recommendation.

10. Maintenance

Tracking maintenance costs for the Palais des Nations

208. In advance of the General Assembly's decision, in its resolution [70/248 A](#) of 23 December 2015, to approve the proposed project scope, schedule and estimated cost of the strategic heritage plan in the maximum amount of SwF 836,500,000, the Secretary-General, in his report of 9 September 2013 on the strategic heritage plan of the United Nations Office at Geneva ([A/68/372](#)), referred to a comprehensive study commissioned to develop a detailed implementation plan and cost analysis for the strategic heritage plan. The study compared the expected renovation, operations and maintenance expenditures envisaged under the strategic heritage plan with a continued reactive maintenance approach and the study results showed significant long-term benefits to Member States under the strategic heritage plan, estimated to generate average annual cost savings of a total of SwF 20.68 million (\$22.02 million), based mainly on estimated projected savings from reduced offsite costs for the Office of the United Nations High Commissioner for Human Rights and projected savings on, inter alia, energy costs, maintenance costs and construction services and ancillary costs, with an increase foreseen for preventive maintenance purposes being noted. The comprehensive study also included a cost-benefit analysis comparing, inter alia, estimated maintenance costs in accordance with industry standards under the strategic heritage plan with a continued reactive maintenance approach, where remedial works were implemented over a longer period. The estimated maintenance cost differences calculated through the 25-year cost-benefit analysis demonstrated the following financial benefit to the Organization.

Table 3
Cost-benefit analysis of maintenance costs over 25 years: recommended implementation strategy versus continuation of reactive approach

(Thousands of Swiss francs)

	<i>Implementation of strategic heritage plan</i>	<i>Reactive approach</i>	<i>Difference</i>
Estimated maintenance costs in accordance with industry standards	323 000	427 000	104 000

Source: UNOG.

209. By May 2018, the comparison between past and post-maintenance costs for the Palais had not yet been undertaken based on the specific changes to the strategic heritage plan. The independent risk management firm considered that there was a risk that the cost reduction expected by Member States might not be achieved. Although this was an external risk, the independent risk management firm continued to list this risk in its reports at the time of the audit.

210. The Board examined how this risk was being managed.

211. At the time of the audit, the United Nations Office at Geneva had yet to establish a framework to enable tracking future efficiencies on maintenance. It was still unclear whether the maintenance costs could actually be reduced in accordance with the expectations expressed in the report of the Secretary-General of 9 September 2013.

212. On 17 November 2021, the Board learned from the strategic heritage plan team that preparing the maintenance and future running cost plans was not in its mandate and that the strategic heritage plan team did not expect to do any further work in this regard other than what they had carried out so far, which was to request maintenance offers in the contractor/subcontractor procurements as part of the pre-construction services for the historic buildings' renovation and the forthcoming renovation of building E.

213. On 22 November 2021, the responsible service at the United Nations Office at Geneva stated that it did not feel capable of tracking the efficiency forecasts in the report of the Secretary-General of 9 September 2013 because the Office did not have full insight into the strategic heritage plan team's decisions, with respect, for example, to variations, change orders and value engineering. However, the Office felt that the consultants who had performed the initial cost-benefit analysis needed to track these commitments on an ongoing basis. For the purpose of informing stakeholders, the Office still referred to the cost-benefit analysis in the 2013 report of the Secretary-General on the strategic heritage plan for future efficiencies on maintenance. Regarding responsibilities, the new strategic heritage plan programme manual of 3 November 2021, version 00, which is consistent in content with the 2017 version of the programme manual which had preceded it, states that user representation comes from strategic heritage plan stakeholders which include representatives of senior management from across the United Nations Office at Geneva. The main responsibilities of the strategic heritage plan stakeholders include:

- Specifying the needs of those users who will operate and maintain the strategic heritage plan's products and monitoring solutions with regard to the different products associated with the strategic heritage plan project to ensure that they meet those needs

- Receiving the completed products of the strategic heritage plan into service, while ensuring that United Nations Office at Geneva staff are ready to operate them as soon as they are ready
- Ensuring that the expected end users' benefits (derived from the strategic heritage plan's outcomes) are realized, within the constraints of the business case

214. In the December 2020 enterprise risk register, the United Nations Office at Geneva had already identified a lack of adequate communication and collaboration between the strategic heritage plan team and the concerned service which would lead to continued difficulties in fully achieving the strategic heritage plan objectives. Mitigation measures included the appointment of two liaison officers at the United Nations Office at Geneva, one for engineering and one for architects, and coordination of installations of new equipment with the strategic heritage plan team, as well as regular meetings between the United Nations Office at Geneva and the strategic heritage plan team. Management confirmed that this risk had subsequently been mitigated and removed from the 2022 Office risk register,

215. As substantial completion of building H was achieved in October 2021, the United Nations Office at Geneva had already been responsible for maintaining the new building at the time of the audit.

216. The renovation of the 1930s historic buildings (A, B, C, D, and S) and the 1970s buildings (E1 and E2) will have been completed, in accordance with the project schedule, by the end of the implementation of the strategic heritage plan in September 2024. By then, one building at a time will have been completed and responsibility for its maintenance will have been transferred from the strategic heritage plan team to the United Nations Office at Geneva. The first in line are buildings A and C, which had initially been planned for completion by March 2022, and building D, planned for completion by June 2022.

217. In order to ensure more efficient building maintenance, the Board perceives the need to track the changes in maintenance costs resulting from the implementation of the strategic heritage plan starting with building H and continuing with each building to be renovated, after each completion. The Board is aware that the cost calculation after the handover of a building can only be rough initially because empirical values for the new and the renovated buildings are lacking. In subsequent years, the cost calculation would become more accurate from year to year because empirical values will then be available. Costing that becomes more accurate from year to year will also provide transparency for budget negotiations.

218. The United Nations Office at Geneva is responsible for monitoring whether the project meets the requirements for efficient long-term maintenance. The Board sees the need for the Office to obtain the necessary information for tracking the efficiency forecasts by working closely with the strategic heritage plan team and its liaison officers.

219. The Board recommends that the responsible service unit of the United Nations Office at Geneva work closely with the strategic heritage plan team and continue to work to assess whether the implementation of the strategic heritage plan will effectively meet Member States' expectations for a reduction in maintenance costs borne by the regular budget for United Nations Secretariat operations at Geneva.

220. The Board recommends that the United Nations Office at Geneva report to the General Assembly on maintenance and operating cost trends for the Palais des Nations.

221. Management accepts the recommendation. In the course of strategic heritage plan project implementation, the United Nations Office at Geneva will report to Member States on post-maintenance considerations related to the Palais des Nations with a view to clarifying overall maintenance requirements, optimizing maintenance approaches and practices, assessing the balance between outsourcing and in-house provision of maintenance and ensuring the cost-effective use of resources.

Reactive versus preventive maintenance

222. In addition to considering actual strategic heritage plan implementation, the Board reviewed the benefits management approach of the United Nations Office at Geneva which defines the management actions that will be put in place to ensure that the strategic heritage plan's outcomes are achieved and confirm that the benefits are realized.

223. Within the scope of regular facilities management and maintenance, the United Nations Office at Geneva provided more than 20 soft and hard facility management services. For 2021, the sum of 4,134,967 United States dollars was spent on soft facilities management services and cleaning, logistics support to event management, transports and removal management, laundry services and locksmith services. A total of \$1,832,699 was spent for hard facility management services, which included maintenance of electrical and mechanical systems, heating, ventilation and air-conditioning systems, building fabric, elevators, parks and gardens, audiovisual systems and electronic security systems, access control and fire alarm and suppression systems, and roads and parking lots. Hard facility management services included both reactive and preventive maintenance.

224. The Board examined how the United Nations Office at Geneva went about making decisions regarding the type of maintenance for equipment in the Palais des Nations.

225. While reactive maintenance restores the equipment to normal operating condition after a problem such as an unexpected equipment failure has occurred, planned preventive maintenance is performed at specified intervals or according to predetermined criteria to reduce the probability of failure.

226. In the management letter of 7 May 2021, the Board recommended that the United Nations Office at Geneva develop a long-term maintenance strategy and have it available at the time of signing the substantial completion certificate (takeover) of building H, together with a cost-benefit analysis of different alternatives for maintenance. In December 2021, the United Nations Office at Geneva was in the process of preparing a maintenance strategy for the Palais des Nations with the help of a consulting firm.

227. In December 2021, the Board learned from the United Nations Office at Geneva that:

- For the new building, predictable maintenance would be of a preventive nature
- All equipment in the Palais des Nations (excluding the new building) requiring outsourced maintenance had been serviced as part of preventive maintenance, but the preventive maintenance percentage in 2019 and 2020 were only 66 per cent and 69 per cent, respectively. These percentages would be below the industry standard of 70–80 per cent, indicating that the equipment was ageing and therefore in need of more frequent repair. In addition, staff also performed maintenance, of which an estimated 40 per cent was preventive and 60 per cent was reactive. The percentages for 2021 for preventive and reactive maintenance had not been provided because the Palais des Nations was under renovation

- By industry standard, the most cost-effective approach to performing maintenance would be preventive maintenance. The objective would be to perform as much preventive maintenance as possible in the Palais des Nations within the available budget
- No health and safety or business continuity interruption issues would have occurred in the last 10 years as a result of preventive and reactive maintenance activities.

228. The Board holds that both reactive and preventive maintenance can be cost-effective and that preventive maintenance does not need to be the cost-effective alternative in every case. While reactive maintenance can lead to lower acquisition costs and reduced planning effort, it can also lead to unexpected equipment failures and associated risks, such as health and safety risks to employees and visitors, business continuity disruption or a financial risk resulting from an increase in maintenance costs due to unplanned activities. In addition, the service life of equipment may be shortened. In general, reactive maintenance is suitable, for example, for equipment that is easy to replace or entails low acquisition costs, equipment in redundant systems where no follow-up costs are expected after a failure and equipment that is old or outdated.

229. In contrast, preventive maintenance provides greater safety because of fewer unplanned shutdowns, better planning of maintenance and repair costs, and a longer service life compared with reactive maintenance. Some equipment requires even statutory preventive maintenance or it may be the case that manufacturers stipulate preventive maintenance in the warranty conditions. However, even with preventive maintenance, the actual failure behaviour of the technical system is an unknown quantity. This can lead to incorrect selection of maintenance intervals and work content, unnecessary maintenance cycles and increased personnel and planning costs. As a result, more time and resources are spent maintaining a piece of equipment than are actually needed. In addition, preventive maintenance cannot exclude failures.

230. Unless preventive maintenance for equipment is not required by law or by the manufacturer in the warranty conditions, the Board holds that a criticality analysis must be conducted before the United Nations Office at Geneva decides on how to maintain a particular piece of equipment. A criticality analysis determines the likelihood of equipment failure and the consequences of failure, such as health and safety risks to employees and visitors, potential business continuity disruptions and financial risks. The criticality analysis should also take into account past experience with equipment maintenance in the Palais des Nations including such factors as the number and types of failures over the life of the asset, unplanned downtime associated with specific failure modes and the number of defects. The more critical the asset, the more important it usually is to keep it from failing.

231. A subsequent cost-benefit analysis can demonstrate the cost-effectiveness of the different types of maintenance. The process involves comparing the total expected cost of each option against the total expected benefits during the equipment's expected lifespan to determine whether the benefits outweigh the costs and, if so, by how much. Through such an approach, it becomes clear whether reactive or preventive maintenance for equipment or a combination of both types of maintenance is cost-effective.

232. The Board recommends that the United Nations Office at Geneva decide on whether to perform reactive or preventive maintenance, or a combination of both types of maintenance, for equipment and technical infrastructure based on a criticality and cost-benefit analysis.

233. Management accepts the recommendation.

11. Building information modelling: data for operation and maintenance

234. The building information modelling (BIM) method enables an in-depth use of computer technology in the design, engineering, construction and operation of built facilities. This method also aims towards providing a seamless link between the project owner, designers, construction professionals, the contractors and end users of a construction project. It is based on the notion of continuous use of digital building models throughout the entire life cycle of a built facility, starting from the early conceptual design and detailed design phase and extending to the construction phase and the longer phase of operation. By using building information modelling, a project team can create a shared project with integrated information encompassing both a best-practice process and multidimensional models.

235. Building information modelling can be highly useful if it is utilized consistently and updated over the entire life cycle of a building. Depending on the objective, the BIM model can contain varying amounts of information relevant to the planning, construction, operation and maintenance of a building.

236. The as-built building information modelling models can reflect the structure, architectural features and building systems (such as mechanical, electrical and plumbing systems of a building) according to varying degrees of detail based on the scope of works and the requirements of the client. The as-built BIM model can also provide data on what was built for further use by facility management, which means that as-built BIM models can also include non-geometric facility management data such as room data, product data sheets, warranties, spare parts lists, cleaning and maintenance instructions and links to documents. These facility management data can be shared with external systems or documents such as Construction Operations Building Information Exchange (COBie) files. The overall purpose of using the as-built BIM models and facility management information is to enable the operator to leverage building data throughout the building life cycle to provide safe, healthy, effective and efficient work environments.

237. A BIM model and COBie files alone cannot assist in operating and maintaining facilities. The data must be synchronized with a Computer-Aided Facility Management (CAFM) system. This specialized system can be used for many tasks such as space and asset management; monitoring and controlling heating; cooling; lighting; warranties; spare parts lists etc.; to optimize the building operations and maintenance. Ideally, data transfer from as-built BIM models and COBie files to a Computer Aided Facility Management system should be complete, structured and recurring, without further adjustment. Depending on the requirements and contractual arrangements, it should ideally be thoroughly tested by the relevant stakeholders, including the design team, the contractor and the future operator, before the handover of the as-built BIM models and COBie data. Otherwise, an enormous effort would be required to effect the subsequent entry of data into the CAFM systems and/or as-built BIM models, which may also lead to additional costs.

238. The strategic heritage plan team uses building information modelling for the design and construction of the strategic heritage plan project. At the end of each construction and/or renovation phase, as-built BIM models and COBie files will be completed for each building and handed over from the strategic heritage plan team to the United Nations Office at Geneva services in charge of operation and maintenance.

239. The strategic heritage plan team works continuously and closely with the United Nations Office at Geneva services in charge of operation and maintenance and has compiled a list of COBie data needed for subsequent operation and maintenance of building H so far.

240. The United Nations Office at Geneva has recently purchased preventive and corrective maintenance modules, on demand work modules and service desk modules.

241. In October 2021, the strategic heritage plan team transferred building H to the United Nations Office at Geneva services in charge of operation and maintenance by signing the transfer form. Both entities agreed that the contractor would be responsible for the proper functioning (operation and maintenance) of the technical systems that have not yet been finally tested or approved. The tests are carried out by the contractor and approved by the strategic heritage plan team. With the transfer form, the strategic heritage plan team informed the Office services in charge of operation and maintenance about the various tests already carried out but still pending in the technical systems. The as-built BIM models together with the COBie data for building H are due to be handed over shortly.

242. The Board welcomes the close cooperation between the strategic heritage plan team and the United Nations Office at Geneva services in charge of operation and maintenance. Nevertheless, the Board found that the planned tests required from the contractor for building H did not include COBie data import tests for the CAFM systems. Moreover, the COBie data and the as-built models for building H were not yet complete.

243. The Board is of the opinion that operation and maintenance are likely the field where BIM will be most profitable because of the long life cycle of building H. Therefore, the Board considers it particularly important to ensure that the COBie data are complete and structured and that further adjustment efforts to import them to the CAFM systems are not needed. Complete as-built BIM models constitute the basis for guaranteeing smooth operation and maintenance

244. The Board recommends that the tests for data import from the Construction Operations Building Information Exchange (COBie) to Computer-Aided Facility Management (CAFM) systems be started at short notice.

245. Management accepts the recommendation and plans to implement the BIM methodology throughout the facility management phase and will plan a handover from the strategic heritage plan project to the facility management service as the final building operator. Tests for data import from the Construction Operations Building Information Exchange to the Computer-Aided Facility Management system started at the end of 2021 as recommended and shall continue until completion.

12. Design changes for the historical building

246. In November 2014, the United Nations Office at Geneva commissioned a design services firm to assist the strategic heritage plan team in designing the overall refurbishment and renovation of the strategic heritage plan. One of the deliverables of the design service firm was to provide an overall technical design and specifications for the historic buildings including all mechanical, electrical and plumbing systems.

247. In January 2021, the renovation works for the historic building started after the guaranteed maximum price had been agreed. The price like the original request for proposal tender was based upon the design services firm's completing technical design.

248. The strategic heritage plan team prepares monthly project reports on the status of the project including key activities, schedule and cost pressures. In addition, the reports provide information on the number of requests for information and approved, in progress, potential and withdrawn variations (these being subdivided into the categories of design, construction, United Nations and unforeseen changes).

249. In the context of construction projects, in a request for information by the contractor, clarification is sought on some aspect(s) of the project such as design plans, drawings, specifications, site conditions and agreements. In the formal written process entailing a request for information, contractors attempt to fill information gaps relating to their contract. The need for a request for information generally arises when the contractor has identified a problem or deficiency for which he needs further information or clarification. In some cases, the responses to requests for information may result in variations.

250. These variations change the types of works to be carried out within the contractor's scope of works compared with those listed in the overall contract. Variations can be very small or very large and may affect the overall complexity as well as the duration and the final cost of the project.

251. Many requests for information and/or change orders will have an impact not only on the project costs but also on the amount of time needed to complete the project, as they lead to additional administrative and coordination efforts for the implementation.

252. In January 2022, the monthly reports on the status of the renovation of the historic building stated a total of 797 requests for information and 27 design- and construction-related variations (both approved and in progress) with a total value of approximately SwF 2,800,000.

253. The Board reviewed the requests for information and change orders due to design- and construction-related changes, particularly for mechanical, electrical and plumbing systems. In doing so, the Board found that some requests for information and design- and construction-related change orders might have been avoided if accurate and complete planning had been carried out.

254. Examples of issues resulting in requests for information and change orders due to design- and construction-related changes include:

- Insufficient space for the switchboard in the planned room
- Inconsistencies between the scheme and drawings regarding the cooling loop in building D
- Computer network cables exceeding the maximum permissible length of 90 metres
- Conflicts between architectural layouts and the audiovisual system drawings
- Redesign of ductwork in the ventilation plant room of the assembly hall in building A to avert clashes with other services

255. In addition, the Board found a construction variation with a value of SwF 1,282,254 for the building E energy centre. This construction-related variation had been mentioned in the monthly reports since October 2021. Despite the request, the strategic heritage plan team did not submit the relevant documentation to the Board. The justification provided by the strategic heritage plan team was that the change order had not yet been signed by the contractor and therefore could not be passed on even though other change orders, which were also unsigned by the contractor, had been submitted. This gives the impression that the planning for the energy centre is not complete and is now being carried out in the course of the construction.

256. The Board is aware of the fact that many of these change orders due to design- and construction-related changes are not errors. They normally occur during construction projects associated with huge renovation processes such as that for the historic building. Some change orders, however, are not the result of issues that were

not identified or known at the planning stage but rather are based on deficient, inaccurate and incomplete planning as described above. This means unnecessary additional administrative and coordination efforts with additional costs.

257. The Board recommends that the strategic heritage plan team improve its oversight of the work of the design services firm and its quality control procedures to ensure that future technical designs are clearer and more accurate.

258. Management accepts the recommendation and confirms that improvements to the quality control process are ongoing. They relate to the design services firm's work, including the augmentation of the strategic heritage plan team through an additional short-term temporary position for an architect at the P-4 level as requested in the Secretary-General's annual progress report (A/76/350) and subsequently approved by the General Assembly in its resolution 76/246 A for the full duration of 2022.

259. In addition, the Board recommends that the strategic heritage plan team assess if there is a potential for recouping any additional costs that may have arisen as a result of inaccuracies or incompleteness in technical design.

260. Management accepts the recommendation and confirms that work continues with the members of the design team relating to the quality of their services and deliverables. Management would like to note that architects and engineers have professional liability insurance for errors and omissions to cover any claims arising from the quality of their work product. As professional designers, they are obliged to carry out their work with the duty to demonstrate reasonable skill and care, not perfection. There are industry benchmarks for such claims which would have to be levied for gross negligence, malpractice, and errors and omissions which are dependent upon the complexity of the project in question. A total change order value of currently less than 1 per cent of the contract works value as is the case for the large and complex historic buildings' renovation works (not all of which is directly related to errors and omissions) is significantly below such benchmark levels.

13. Delays in the procurement of building E works

261. Works relating to the 1970s building E (renovation of conference rooms and dismantling of the office tower) are the last section of the overall project. Therefore, all delays in the completion of the building E renovation works may also lead to a delay of the overall project.

262. The procurement of the building E works had not been completed at the time of the audit. The audit ended shortly before the deadline for the final submission of proposals by bidders, which were due on 14 February 2022.

263. The Board noted that the procurement procedure for the building E works had started significantly later than scheduled in 2020. Moreover, the steps that had been completed at the time of the audit in February 2022 had lasted longer than originally planned in 2020. According to the strategic heritage plan team's project schedule of January 2020, the request for expression of interest should have originally been published in February 2020 and the deadline for submission of proposals by bidders should have been in January 2021. Actually, the request for expression of interest had eventually been published in December 2020 and the deadline for the submission of tender proposals was 14 February 2022. This means a delay of more than one year. The procurement schedule of December 2020, when the procurement procedure had already started, still experiences a delay of about eight months. Details are given in figure XIII below.

agreement was also finalized in December 2020. This period of parallel workloads encompassing the guaranteed maximum price agreement for the historic buildings, the ongoing building H works, the completion of the temporary conference infrastructure works and the technical documentation needed for the request for the expression of interest REOI for building E works had been a time of considerable challenge for the strategic heritage plan team.

268. After the deadline for the expression of interest in March 2021, it took six months for the request for proposals to be issued to the prequalified firms in September 2021. It took less than two months to complete the prequalification procedure resulting in a list of prequalified firms which was established in May 2021. During the remaining four months ending with the issuance of the request for proposals, the technical evaluation criteria were fixed on 8 July 2021, the commercial evaluation criteria were fixed on 9 July 2021, advice on the contract was received from the Office of Legal Affairs on 31 August 2021, the final elements of the scope of works, specifications and drawings were received on 10 September 2021 and the final pricing documents and final draft contract were received on 14 September 2021.

269. The Board sees the risk of further slippage in the procurement of the building E works as the envisaged time frame of less than four months for the evaluation of the bidders' proposals, further negotiations and contract finalization seems rather tight given the complexity of the works and the contract structure. The planned overlap of early action works with the design completion and pre-construction services activities entails further risks which will need to be carefully managed. Given that the building E works are clearly on the critical path of the project and every month of delay in the overall completion entails significant costs, sufficient human resources and a streamlined cooperation of the parties involved have to be ensured.

270. The Board recommends that the United Nations Office at Geneva monitor whether the internal human resources and communication processes for the further procurement and the pre-construction, early works and renovation contract processes for the office tower dismantling and the renovation works on building E are sufficient and timely enough to avert further delays.

271. Management accepts the recommendation and wishes to stress that management is fully aware that the remainder of the building E procurement and works is on the critical path of the strategic heritage plan project. Management intends to ensure that the respective deadlines are met to the extent possible within the approved amount of resources for the project and the current prevailing construction market conditions. In this regard, management also agrees with the Board's statement that the step taken to issue a request for information for the procurement of building E has not been followed for the other buildings. However, management wishes to note that in the previous tenders for building H and the historic buildings, a series of industry consultations on the scope of works had been presented in order to gather inputs from the construction market to help identify the procurement strategy most suitable for adoption.

14. Heritage and works of art

Heritage

272. One of the key objectives for the strategic heritage plan is to preserve the heritage, prevent irreversible deterioration or damage, and restore and maintain the capital value of the Palais des Nations and its content. In its resolution 69/262, the General Assembly encouraged the Secretary-General to continue his efforts to preserve the heritage and architectural integrity of the Palais des Nations throughout all phases of the strategic heritage plan project.

273. In August 2015, the design firm produced a master plan with a classification approach for categorizing the architectural elements in the Palais des Nations. In this context, the glass façade, the main interior public spaces and the conference rooms XVII, XVIII and XIX in building E were classified as having a high heritage value. These conference rooms were designed by the internationally recognized French architect and designer Charlotte Perriand who was an essential collaborator on the modernization of the Palais des Nations in the 1960s and 1970s.

274. In January 2017, art and heritage experts documented all of the key elements of the heritage imperatives and emphasized that building E was one of the key buildings in modern architectural history. In this regard, it is up to the current renovation project to initiate a respectful renovation which aims towards preserving the existing circulation, conference rooms, distribution of office spaces rather than modifying them, because these are the areas with the highest heritage value.

275. In January 2016, the strategic heritage plan team stated to the heritage authority of the Canton of Geneva that the furniture in the conference rooms would be maintained and the conference rooms would be preserved.

276. In September 2017, the strategic heritage plan team stated to the heritage authority of the Canton of Geneva that conference room XIX would not be part of the strategic heritage plan project owing to the anticipation by the United Nations Office at Geneva of a donation from Qatar for the full renovation of that room. Furthermore, the strategic heritage plan team would not be responsible for those works because the renovation would be financed by a donation and would be undertaken and completed by the donating Member State in advance of the strategic heritage plan works. In a letter to the United Nations Office at Geneva, the heritage authority stated that it had analysed the workplans and drawings and took note that conference room XIX in building E was subject to a proposed redesign. However, no information was included in the shared documents. In this regard, the heritage authority recalled that the original layout of conference room XIX was worthy of preservation.

277. In a report, the art and heritage experts stated that the United Nations Office at Geneva had suffered historically from the deterioration of heritage furniture, particularly 19 textile sofas designed by Charlotte Perriand, which were stored in the buildings of the Palais des Nations over the years with uncontrolled climatic conditions in storerooms. The art and heritage experts listed alternative solutions for furniture and deposited materials and stated that the United Nations Office at Geneva could at least make some donations of goods to museum institutions whose vocation it is to study the history of design and architecture and testify to the general public on that subject. The experts recommended that the solution of a sale in a gallery or at an auction also be envisaged. The experts emphasized that Charlotte Perriand's contribution to contemporary design was evident both in the financial value of her works and in her success with the general public. The experts referred to an auction at which an office desk from 1939 had sold for €725,000 and a table from 1953 for SwF 180,000 in October 2017. The expert stated that the rest of the sale, totalling 20 lots and acquired mostly by foreign Charlotte Perriand collectors, had brought in more than €3 million euros.

278. In April 2018, in a memorandum to central support services of the United Nations Office at Geneva, the strategic heritage plan team stated that most of the existing furniture in conference room XIX would not be reused after the renovation. The strategic heritage plan team therefore held that the remainder furniture should be stored temporarily until an optimal solution had been agreed between the strategic heritage plan team and central support services. On 18 April 2018, central support services responded that the surplus furniture should be either sold in the collectors market or donated to museums, as subsequently agreed by the Director of the Division of Administration on 16 April 2018.

279. The Board wishes to direct attention to the fact that the furniture might have been sold with a surplus in the collectors market.

280. In August 2018, in a note to the Director of the Division of Administration, central support services stated that the forthcoming renovation of conference room XIX was expected to start at the end of August 2018 and the furniture located in that room needed to be disposed of. Central support services explained that all movable chairs were reused. However, the 337 double chairs and 120 desks were fixed to the floor, hindering their reuse in other areas of the Palais des Nations. In the new design for the renovation of room XIX, the reuse of 21 double fixed chairs in the area for the public is contemplated. Thirty double fixed chairs and five desks would therefore be used as spare parts for room XVIII which has the same furniture. In view of the cost of transportation to a warehouse amounting to SwF 14,500 and the cost for storage in the amount of SwF 3,000 per month, central support services recommended that all of the remaining furniture be disposed of through destruction by the donating Member State's contractor for the conference room XIX renovation project. This solution would be at no cost to the United Nations Office at Geneva.

281. The Board noted that the United Nations Office at Geneva in liaison with the strategic heritage plan team was not able to preserve some of the original architectural elements in conference room XIX owing to budgetary constraints. The Board is concerned about the disposal of 286 double chairs and 115 desks.

282. The Board recommends that the United Nations Office at Geneva preserve the heritage, prevent irreversible deterioration or damage, and restore and maintain the capital value of the Palais des Nations and its contents as far as possible within the budgetary constraints both during and after the ongoing process of renovation of the Palais des Nations.

283. Furthermore, the Board recommends that the United Nations Office at Geneva continue to store heritage furniture to the extent feasible, considering economical, budgetary and operational constraints in appropriate areas to prevent the furniture with a high heritage value from losing value as a result of unsuitable or inappropriate storage.

284. Management accepts the recommendation and wishes to note that the United Nations Office at Geneva has made historic furniture available to a major local museum in Geneva.

Works of art

285. In 2015, the Library Cultural Activities and Outreach Unit (library service) developed a works of art management plan. According to that plan, the library service is expected to catalogue the works of art collection, give each work of art a unique inventory number and photograph and describe those works in the database. The term *work of art* is used to refer to movable or non-movable artefacts such as paintings, sculptures, murals, vases and mosaics. The database records works of art acquired through donations or purchases during both the era of the United Nations Office at Geneva and the League of Nations era. Each database record is to include the following information:

- (a) Object description: name/title, domain, creation year, series, size, author, materials and techniques, authenticity;
- (b) Inventory: inventory number, status (shown, lent, stored), location, state of conservation, framing;
- (c) Acquisition: source, collection, date, donor.

286. In its resolution [69/262](#), section III, paragraph 18, the General Assembly requested the Secretary-General to ensure that works of art, masterpieces and other gifts were handled appropriately during the design and renovation stages of the strategic heritage plan.

287. In September 2015, the Secretary-General stated that the strategic heritage plan would develop a comprehensive inventory of the works of art that might be impacted by the renovation. Each item would be classified and protected, and/or moved during the renovation works to prevent damage. An assessment would also be made to establish the necessity for conservation through special treatments. Once the renovation and construction works were completed, appropriate reinstallation and relocation of the items would occur.

288. In order to ensure a proper inventory and management of gifts donated by Member States to preserve the historical and capital value of the United Nations, an art expert was hired to fulfil this task. One of the main deliverables for the art expert was to assist in the creation of a database of the works of art including all relevant details.

289. In the fourth annual progress report on the strategic heritage plan ([A/72/521](#)) of 9 October 2017, the Secretary-General stated that an exhaustive inventory of works of art had been finalized in full coordination with the library service.

290. In the fifth annual progress report on the strategic heritage plan ([A/73/395](#)) of 25 September 2018, the Secretary-General stated that extensive work had been done to define the detailed art and heritage specifications to be included in the technical documents of the renovation works contract packages.

291. In March 2022, the Board received a list extracted from a database with 1,211 works of art.

292. The Board reviewed the works of art database list and noted that:

- There was generally a specific inventory number for each work of art in the current list. The Board also noted, however, that a series of paintings or sculptures by one artist or several pieces of furniture had one inventory number. There was a three-dimensional object with inventory number UNG73321 in the database with a size of 640 x 160 centimetres. The “work of art” was composed, however, of three objects in the manner of a triptych. Additionally, a set of five decorative panels, a set of four paintings and a set of six armchairs also had one inventory number.³ In contrast with these observations, the Board found several sets of works of art with a series of consecutive inventory numbers
- There was incomplete information in the database. A total of 171 items did not have any information on size and 41 items did not have any information on year of creation. Furthermore, 14 works of art did not indicate the author
- Eight items had the designation “unknown” in the column bearing the heading “location”. One of those works of art (*The Volunteers*, in engraved wood (UNG 83015)) was a creation of the famous German artist Käthe Kollwitz (1867–1945),

293. The Board reviewed the technical documents of the strategic heritage plan and noted the weaknesses described directly below:

- The technical documents contained a database with 250 works of art. The Board reviewed the database and found 10 works of art without an inventory number. In addition, the Board found an annex to the technical documents listing

³ Inventory numbers: UNG32276, UNG73264 and UNG100070.

additional works of art and including a remark that the works of art with an inventory figure in red had not been seen by the art expert. The Board found that 34 out of the 79 inventory figures in the annex (43 per cent) were in red.

294. The Board is of the view that a professional and reliable registry of all works of art is the core of any well-organized arts management system. While this art collection has now attained significant size and value in the context of price, art and culture, the systematic and professional inventory and management can be further improved.

295. The Board holds that accurate and complete database information would contribute to ensuring the proper management of the works of art so that they can be better maintained and a physical check can be carried out more efficiently and effectively. In addition, the Board believes that the whole database could exert a direct influence on the safety and integrity of the works of art.

296. The Board recommends that the United Nations Office at Geneva ensure the further revision and incorporation of all relevant details into the works of art database, wherever possible.

297. Management accepts the recommendation and wishes to note that the United Nations Office at Geneva has had a database to manage its heritage assets since 2007. As part of the strategic heritage plan project, that database was migrated to a new database system and the strategic heritage plan consultant helped to improve the quality of some of the data. In that regard, management confirms that the database is reviewed and updated on an ongoing basis and that whenever more information becomes available, it is added to the database. The Office intends to update and further revise the database in relation to some of the specific comments raised by the Board, wherever possible. Given that some of the items in the collection date back to the founding of the League of Nations, the United Nations Office at Geneva does not always have all the information required.

15. Sustainability

298. The 2030 Agenda for Sustainable Development emphasized the imperative of incorporating sustainability considerations into activities and operations of United Nations entities. Pursuant to the Guidelines for the Management of Construction Projects, one of the main objectives of the United Nations is to achieve environmentally sustainable and resource-efficient facilities.

299. In September 2017, in his fourth annual progress report on the strategic heritage plan of the United Nations Office at Geneva, the Secretary-General stated that building H had been designed to ensure a better quality of construction, to ensure lower operational costs and to reduce the overall life cycle costs. Building H would also ensure that the users of the building were provided with a comfortable, sustainable and environmentally friendly workplace.

300. The Board examined how sustainability considerations had been fully integrated into the strategic heritage plan project.

Certified wood products

301. In his sixth annual progress report on the strategic heritage plan of the United Nations Office at Geneva ([A/74/452](#)) of 25 September 2019, the Secretary-General stated that, while not a project objective, the environmental impact of building H was measured against the internationally recognized Leadership in Energy and Environmental Design (LEED) gold-equivalent certification, although the project would not be officially submitted to the Green Building Council of the United States of America. Wooden beams from sustainably managed forests less than 350 kilometres from the site and low-emission materials were used throughout the entire construction process

and represented two of the credits targeted as part of the Leadership in Energy and Environmental Design equivalent certification.

302. In March 2016, as part of the detailed design phase, the design firm stated that the goal for the new permanent building was to obtain Leadership in Energy and Environmental Design gold certification based on version 4 which had been launched in 2013 from the United States Green Building Council. As the project was further developed during the technical design phase, the strategic heritage plan team utilized Leadership in Energy and Environmental Design version 3. This decision was made on the basis of (a) the challenges of achieving some of the version 4 credits in the local context and (b) the fact that for projects outside the United States, version 3 had already established alternative compliance paths, whereas at the time of the technical design phase version 4 had not. Leadership in Energy and Environmental Design version 3 had been launched originally in 2009.

303. Credits in the Leadership in Energy and Environmental Design system addresses seven different categories such as water efficiency, indoor environmental quality, regional priority and materials. For wood products to be considered for LEED credits, they must be certified by the Forest Stewardship Council or an approved equivalent. The Forest Stewardship Council is an organization that has established voluntary sustainability standards and covers a wide spectrum of sustainability concerns, ranging from environmental risks and corruption to working conditions and labour rights.

304. The Board noted that LEED version 4 in comparison to version 3 had updated reference standards and higher sustainability requirements. In addition, LEED version 4 wood products criteria are valued at 100 per cent of their cost for the purposes of credit achievement. Under version 3, however, a minimum of 50 per cent of wood-based materials is sufficient for obtaining points. The contractor for building H stated in the LEED report that the 50 per cent benchmark had been fulfilled.

305. The Board holds that sustainability considerations generate long-term benefits not only to the organization but also to society, to the economy and to the environment. The Board is therefore of the view that sustainable material selection forms a key part of an overall push for sustainable development by Governments and United Nations organizations.

Low global warming potential equipment for refrigeration

306. In its 2020 report on good practices in respect of facilities and infrastructure management, the Joint Inspection Unit determined that organizations should consider the aim of being environmentally sustainable when constructing new buildings. The Joint Inspection Unit recommended that organizations use renewable energy sources for heating and electricity; invest in solar panels and/or geothermal energy; avoid air conditioning as far as possible; and preferentially use refrigerants with low global warming potential.

307. The climate impact of a substance is commonly expressed in terms of global warming potential. The lower the global warming potential, the greater the climate-friendliness of the substance. Hydrofluorocarbons which are used as refrigerants and in air conditioning and heat pumps are powerful greenhouse gases. Those gases have a 100-year global warming potential up to 15,000 times greater than carbon dioxide.

308. The aim under the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, adopted on 15 October 2016, is to phase down hydrofluorocarbons by cutting their production and consumption. The European Union and other developed countries needed to take the first reduction step in 2019, while most developing countries intend to start their phasing down in 2024.

309. While developed nations have historically accounted for the majority of global hydrofluorocarbons emissions, total hydrofluorocarbons emissions in developing nations are projected to quadruple by 2030. This rapidly increasing rate of hydrofluorocarbons emissions is driven largely by the increased demand for refrigeration and air conditioning. According to the United Nations Environment Programme, the emissions from cooling are growing three times faster than the average rate of increase and are projected to account for 13 per cent of total greenhouse gases by 2030. Therefore, the United Nations Environment Programme initiated the Kigali cooling efficiency programme to help nations transition to more efficient cooling equipment, through phasing down the production and use of hydrofluorocarbons and replacing them with newer, climate-safe refrigerants. An additional benefit is that refrigerants with a low global warming potential can be more energy-efficient than hydrofluorocarbons. In some instances, they can lower energy use by as much as 25 per cent.

310. During a site visit to building H, the Board noted that the contractor had installed nine heat pumps with hydrofluorocarbons with a 100-year global warming potential of 1,430 and 2,107. Those heat pumps, instead of electric heaters only, are used for the local on-demand production of sanitary hot water in the kitchenettes and for cleaning sinks and in the grab and go café. They serve the purpose of obviating thermal losses associated with a centralized sanitary hot water system. The new permanent building has a total of 11 kitchenettes. The Board found 11 beverage coolers, with hydrofluorocarbons with a 100-year global warming potential of 1,430, which had been purchased under one of the Office's long-term service provider contracts.

311. The Board is of the view that the market offers many sustainable and energy-efficient products as an alternative to products with high global warming potential refrigerants. The refrigeration and air-conditioning sector, as a major energy consumer, plays a vital role for every country in efforts to reach both climate change mitigation and adaptation targets. Given the urgent need for emission reductions, the Board therefore holds that cutting hydrofluorocarbons use is one of the most effective tools for helping to prevent runaway climate change. Furthermore, the Board holds that this action generates long-term benefits not only to the organization but also to society, to the economy and to the environment. Additionally, if the United Nations Office at Geneva had changed to refrigerants with low global warming potential (either during the design or construction), the organization might have had a lower energy consumption over the complete lifespan of the products.

Internal door frames and door leaves

312. According to the Guidelines for the Management of Construction Projects, an in-depth analysis should assess any design decisions that are being made in the context of their impact on life cycle costs. Significant design choices of systems, materials and elements must be assessed by a formal life cycle analysis. Life cycle costing focuses on comparing competing alternatives and takes into account both present and future costs for each alternative implementation action.

313. The design firm described the three technical specifications for the internal doors for building H. The internal door frames and door leaves shall either be completely covered with melamine laminate or wood veneer or painted, depending on the intended use and design intent. For the painted wooden door frames and the door leaves, the finishing coat is a satin enamel with high resistance to scratches and wear, based on an acrylic polyurethane dispersion, on coats of intermediate paint and primer. Each of the door leaves with laminated finish is covered with a single piece of high-pressure melamine laminate sheet.

314. In November 2021, during a site visit to building H, the Board noted that some of the door frames and door leaves had been damaged at the edges, many of which had been captured in the punch list for rectification by the contractor. The Board examined the damaged edges and noted that the door frames and the door leaves had been painted. The Board found that most of the door frames and door leaves to the corridors and staircases had been painted. The door leaves that are covered with melamine laminate, which is a more robust material, are on cupboard unit doors.

315. The Board holds that a cost-efficiency analysis of the total life cycle of specific goods and products should be part of the Office's procurement and decision-making process. In this regard, the additional costs for doors with a more durable material, for example, will balance out over time. With a more durable material, significant operational costs could be avoided over the lifespan of the door frames and door leaves.

316. The Board recommends that the United Nations Office at Geneva integrate more thoroughly the principles of whole life cycle costing of the materials and products used in its future projects and set more ambitious targets for sustainability for its future capital projects.

317. Management accepts the recommendation for future United Nations Office at Geneva capital projects, that is, those yet to be conceived at the time of the recommendation. Management does not wish to disrupt unnecessarily the implementation of projects currently under way and to potentially increase their approved costs by raising the high sustainability standards already set part way through the different project's delivery programmes. This includes the remaining works of the strategic heritage plan project. Furthermore, the Office intends to implement the recommendation by soliciting the relevant United Nations procurement category managers to develop a toolkit for life cycle costing, including guidance on sustainability, which would define the methodologies to be used for soliciting materials and products. Once those tools are defined by the category managers, they will be used for decision-making in future United Nations Office at Geneva procurements for capital projects.

E. Acknowledgement

318. The Board wishes to express its appreciation for the cooperation and assistance extended to its staff by the Director-General of the United Nations Office at Geneva and by members of her office.

(Signed) Jorge **Bermúdez**
Comptroller General of the Republic of Chile
(Chair of the Board of Auditors)

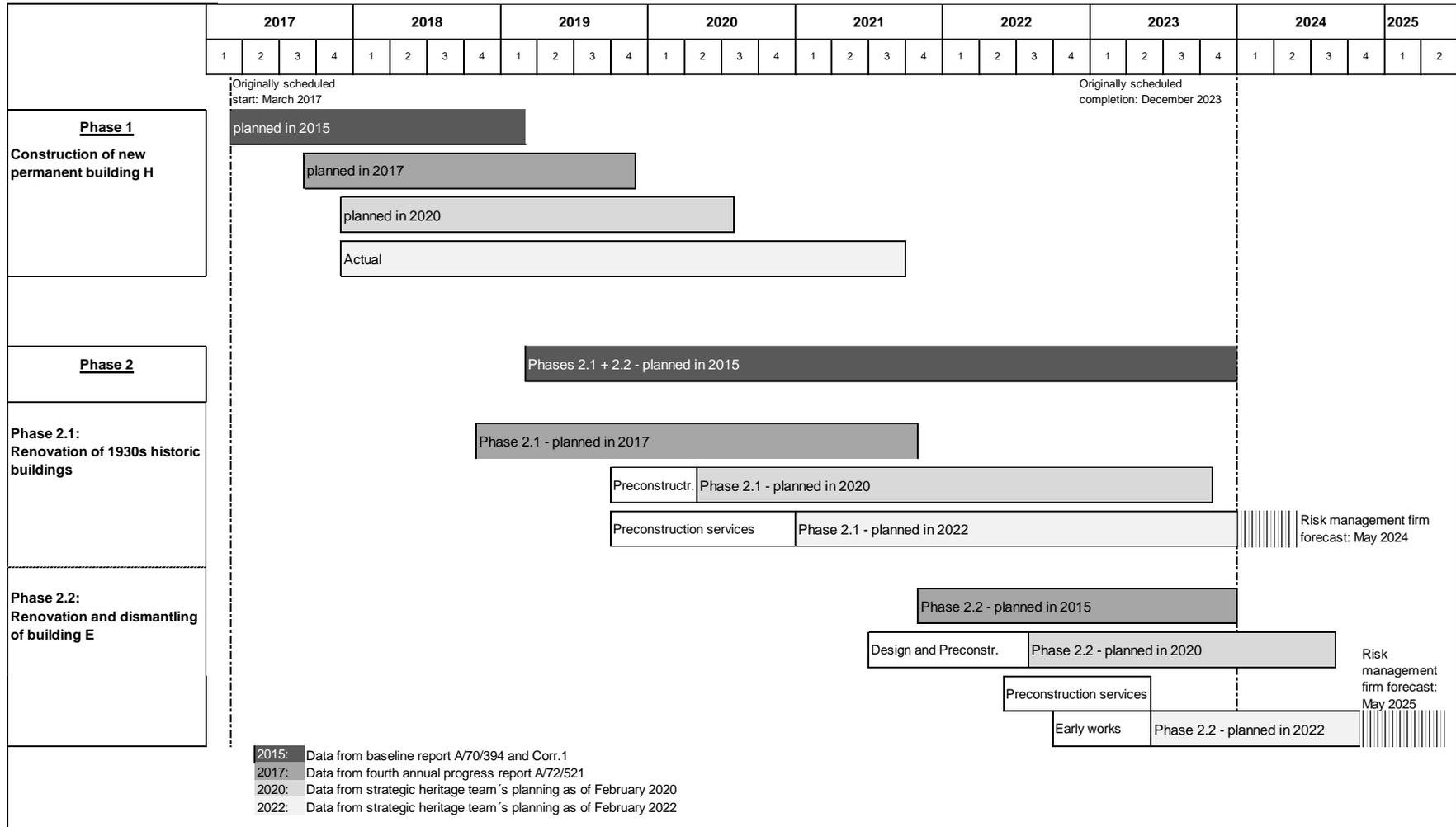
(Signed) Kay **Scheller**
President of the German Federal Court of Auditors
(Lead Auditor)

(Signed) Hou Kai
Auditor General of the People's Republic of China

21 July 2022

Annex I

Comparison of construction periods as planned in 2015, 2017, 2020 and 2022



Source: Board of Auditors analysis of the above-mentioned reports and schedules.

Note: The schedule for the strategic heritage plan project contained in the second annual progress report of the Secretary-General (A/70/394 and Corr.1) was approved by the General Assembly in its resolution 70/248 A.

Annex II

Status of implementation of recommendations up to the year ended 31 December 2020 on the strategic heritage plan

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
1.	2020	A/76/5 (Vol. I) , para. 230	The Board recommends that the Administration integrate a “responses risk register” into future monthly risk management reports.	Included in monthly risk management reports.	The recommendation is considered to be implemented.	X			
2.	2020	A/76/5 (Vol. I) , para. 231	The Board recommends that the Administration standardize the presentation of COVID-19 pandemic risks in risk registers in quarterly and monthly risk management reports.	Implemented in 2021 in monthly risk management reports.	The recommendation is considered to be implemented.	X			
3.	2020	A/76/5 (Vol. I) , para. 235	The Board recommends that the Administration correct anomalies in the risk database and keep it correct and up to date.	The updated risk database is a live document and is included in each monthly report.	The recommendation is considered to be implemented.	X			
4.	2020	A/76/5 (Vol. I) , para. 236	The Board recommends that the Administration fill in all data fields if a risk has been taken up in the risk register.	The updated risk database is a live document and is included in each monthly report.	The recommendation is considered to be implemented.	X			
5.	2020	UNS-SHP-UNOG-2021-26, para. 93	The Board recommends that the strategic heritage plan team review the risk database contents by means of an extract from the risk database and inform the integrated risk manager about anomalies.	All new risks and actions are circulated to relevant owners as they are created.	The recommendation is considered to be implemented.	X			
6.	2020	UNS-SHP-UNOG-2021-26, para. 94	The Board recommends that the strategic heritage plan team review the structure of the risk database for redundant data fields.	Implemented 2021. Risk database was reviewed and redundant data fields were removed.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
7.	2020	UNS-SHP-UNOG-2021-26, para. 98	The Board recommends that the strategic heritage plan team in cooperation with the independent risk management firm define the action owner role in the Risk Management Strategy and distinguish its tasks and responsibilities from those under the “mitigation owner” role.	Described in Risk Management Strategy, April 2021.	The recommendation is considered to be implemented.	X			
8.	2020	UNS-SHP-UNOG-2021-26, para. 104	The Board recommends that the strategic heritage plan team explain what a fallback plan is in the Risk Management Strategy.	Described in Risk Management Strategy, April 2021.	The recommendation is considered to be implemented.	X			
9.	2020	UNS-SHP-UNOG-2021-26, para. 108	The Board recommends that the strategic heritage plan team adapt the Risk Management Strategy to the actual approach for the risk database update.	The Risk Management Strategy has been updated April 2021.	The recommendation is considered to be implemented.	X			
10.	2020	A/76/5 (Vol. I), para. 258	The Board recommends that the Administration review the entries and invoices charged to “other capitalizable costs” AA-000018.10 and, as far as possible, directly assign these to the specific buildings.	The recommendation is implemented. All the entries up to the 31 December 2021 have been reviewed and assigned to the specific buildings.	The recommendation is considered to be implemented.	X			
11.	2020	A/76/5 (Vol. I), para. 259	The Board also recommends that the Administration allocate the remaining capitalized costs through an appropriate percentage rate to the different buildings.	This recommendation is implemented. The remaining capitalized costs have all been allocated to the different buildings in accordance with the methodology agreed with Headquarters.	The recommendation is considered to be implemented.	X			
12.	2020	A/76/5 (Vol. I), para. 260	The Board recommends that the Administration extend the project structure and include costs for the programme management firm, the independent risk management firm and the technical support service firm in the building-specific “other capitalizable costs”.	This recommendation is implemented. The new work breakdown structure elements underneath each individual building in the project structure have been created.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
13.	2020	A/76/5 (Vol. I) , para. 261	The Board recommends that the Administration allocate remaining costs charged to "other capitalizable costs" AA-000018.10 to the different buildings on an annual basis.	This recommendation is implemented. As indicated above, as of 31 December 2021, all costs charged to the "other capitalizable costs" had been allocated to the different buildings.	The recommendation is considered to be implemented.	X			
14.	2020	A/76/5 (Vol. I) , para. 262	The Board recommends that the Administration formalize coordination with the Secretariat in New York, in particular with the global asset management policy service, and document communication on accounting decisions or advice.	This recommendation is implemented. For example, the methodology on the allocation of the other capitalizable costs has been shared and approved by the global asset management policy service.	The recommendation is considered to be implemented.	X			
15.	2020	UNS-SHP-UNOG-2021-26, para. 162	The Board recommends that the strategic heritage plan team ensure timely settlement of the temporary infrastructure for conferences to the final assets.	This recommendation is implemented. The temporary infrastructure for conferences has been recognized as a final asset as of 31 December 2020.	The recommendation is considered to be implemented.	X			
16.	2020	UNS-SHP-UNOG-2021-26, para. 164	The Board recommends that the strategic heritage plan team and the United Nations Office at Geneva ensure a monthly settlement of costs to assets under construction for the amount that was charged against the budget of the Division of Conference Management.	This recommendation is implemented. The temporary infrastructure for conferences is recognized as a final asset since 2020.	The recommendation is considered to be implemented.	X			
17.	2020	UNS-SHP-UNOG-2021-26, para. 166	The Board recommends that the strategic heritage plan team assign the directly attributable costs to the temporary infrastructure for conferences.	This recommendation is implemented. The costs for the tender services were attributed to the temporary infrastructure for conferences.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
18.	2020	UNS-SHP-UNOG-2021-26, para. 174	The Board recommends that the strategic heritage plan team review the journal entries made in Umoja for the transfer of audiovisual equipment to the United Nations Office at Geneva.	This recommendation is implemented. The United Nations Office at Geneva reviewed the accounting accuracy of journal entries in Umoja for the purpose of IPSAS reporting.	The recommendation is considered to be implemented.	X			
19.	2020	UNS-SHP-UNOG-2021-26, para. 179	The Board recommends that the strategic heritage plan team apply a useful life of seven years to the temporary infrastructure for conferences as determined in the United Nations corporate guidance on property, plant and equipment for temporary buildings and review the useful life of the audiovisual equipment.	This recommendation is implemented. The useful life of the temporary infrastructure for conferences is seven years since its capitalization as final asset.	The recommendation is considered to be implemented.	X			
20.	2020	UNS-SHP-UNOG-2021-26, para. 174	The Board recommends that the strategic heritage plan team review the journal entries made in Umoja for the transfer of audiovisual equipment to the United Nations Office at Geneva.	This recommendation is implemented (see item 18).	The recommendation is considered to be implemented.	X			
21.	2020	A/76/5 (Vol. I), para. 274	The Board recommends that the Administration allocate SwF 829,194 recorded currently under building H as asset under construction to the building E car park asset (final asset) and start the depreciation as of the completion date in January 2019.	This recommendation is implemented. The allocation has already been recorded in the accounts as of 31 December 2020 and the depreciation has been adjusted to start in January 2019.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
22.	2020	A/76/5 (Vol. I), para. 275	For assets that become available for use in the future (i.e. the new permanent building), the Board recommends that the Administration and the United Nations Office at Geneva review the direct attributable costs (labour, material and overhead) within the project that are to be split across different assets. This is to ensure that an asset moves from under construction status to final when the asset is substantially complete, accepted and available for use, thereby also taking into account the United Nations Policy Framework for International Public Sector Accounting Standards.	The recommendation is implemented by ensuring that the mix of work performed on different buildings is clearly segregated by building in order to ensure a correct capitalization value and accurate timing with respect to starting the depreciation.	The recommendation is considered to be implemented.	X			
23.	2020	UNS-SHP-UNOG-2021-26, para. 208	The Board recommends that the strategic heritage plan team sign a substantial completion certificate only at that point when the contractor has sufficiently complied with his contractual responsibilities and the construction work is ready to be handed over to the United Nations Office at Geneva.	Implemented. Substantial completion certificate signed on 4 October 2021 at the point when the works were assessed as substantially complete under the contract.	The recommendation is considered to be implemented.	X			
24.	2020	UNS-SHP-UNOG-2021-26, para. 209	The Board recommends that the strategic heritage plan team ensure that the punch list includes all remaining defects, addresses who is responsible and includes the timing regarding when each defect should be completed.	Implemented. Punch list has been updated pursuant to recommendation.	The recommendation is considered to be implemented.	X			
25.	2020	UNS-SHP-UNOG-2021-26, para. 224	The Board recommends that the strategic heritage plan team reduce the average processing time during the response process and reduce the backlogs.	Implemented. Strategic heritage plan team has implemented a variation tracker tool and regularly reviews this with a view to reducing processing times.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
26.	2020	UNS-SHP-UNOG-2021-26, para. 236	The Board recommends that the strategic heritage plan team ensure that the as-built building information modelling (BIM) models for sections 1 and 2 are updated and the operation, maintenance and asset management files are delivered.	Implemented. The contractor for building H updated the building information modelling (BIM) models during the finalization of the project. The outstanding operations and maintenance and asset management files are being delivered as part of the punch list.	The recommendation is considered to be implemented.	X			
27.	2020	UNS-SHP-UNOG-2021-26, para. 237	Furthermore, the Board recommends that the strategic heritage plan team ensure that the files of the upcoming as-built BIM models are accurate and complete so as to ensure a correct operation, maintenance and asset management.	Implemented. Strategic heritage plan team holds regular meetings with the contractor to ensure that the files of the BIM models are accurate and complete so as to assist in the correct operation, maintenance and asset management.	The recommendation is considered to be implemented.	X			
28.	2019	A/75/135 , para. 82	The Board recommends that the strategic heritage plan team revise the current chart to report on the actual and budget cost of each contract phase separately in the chapter in the monthly project reports from the start of the renovation works.	Implemented. Strategic heritage plan team now includes a chart in monthly project reports that indicates the actual and budget cost of each contract phase pursuant to the recommendation.	The recommendation is considered to be implemented.	X			
29.	2019	A/75/135 , para. 85	The Board recommends that the United Nations Office at Geneva incorporate project status charts in the report to the General Assembly.	Implemented in annex IV to the eighth annual progress report of the Secretary-General to the General Assembly (A/76/350).	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
30.	2019	A/75/135 , para. 100	With regard to future procurement of renovation construction works, the Board recommends that the United Nations Office at Geneva incorporate lessons learned and implement, from the outset, contracting strategies that are balanced appropriately. Such strategies would further enable potential qualified contractors to opt to participate in the tender and submit competitive bids while not taking on excessive risk to the United Nations.	Lessons learned from previous strategic heritage plan procurements have been taken into account and implemented for building E procurement.	The recommendation is considered to be implemented.	X			
31.	2019	A/75/135 , para. 114	The Board recommends that the United Nations Office at Geneva define and document a forward-oriented transversal strategy on how the building information modelling method would support the Office throughout the entire lifetime of the buildings of the Palais des Nations.	This recommendation is under implementation. United Nations Office at Geneva/ Central Support Services/ Facility Management Service with the help of the two BIM experts is currently working to complete the building information modelling strategy to support the required operations and maintenance activities along the life cycle of the Palais des Nations buildings.	The recommendation is considered to be under implementation.		X		
32.	2019	A/75/135 , para. 142	The Board recommends that the strategic heritage plan team continue its efforts to ensure the high quality of the building information models for the entire strategic heritage plan project.	For building E: a dedicated chapter entitled "BIM management plan" is part of the request for proposals documentation and the bidders/contractor need to take it into account for their offer/works. For the building H contractor, meetings on BIM documented in PMWeb.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
33.	2019	A/75/135 , para. 157	The Board recommends that management conduct a further detailed review and continue to further refine the calculation of energy saving measures and expected energy use.	Information provided in the questions and answers for the last report to the General Assembly.	The recommendation is considered to be implemented.	X			
34.	2019	A/75/135 , para. 165	The Board recommends that the United Nations Office at Geneva report on the projected number of occupants following the implementation of the strategic heritage plan in each annual progress report of the Secretary-General.	Presented in report A/76/350 .	The recommendation is considered to be implemented.	X			
35.	2019	A/75/135 , para. 174	The Board recommends that the United Nations Office at Geneva report on the projected number of workspaces following the implementation of the strategic heritage plan in each annual progress report of the Secretary-General.	Presented in report A/76/350 .	The recommendation is considered to be implemented.	X			
36.	2019	A/75/135 , para. 210	The Board recommends that the United Nations Office at Geneva assess and apply measures to lower carbon emissions when planning and constructing future buildings, thereby also taking a life cycle assessment into account.	Implemented in building E design.	The recommendation is considered to be implemented.	X			
37.	2019	A/75/135 , para. 218	The Board recommends that the United Nations Office at Geneva integrate the use of more renewable energy into future building designs on the campus of the Palais des Nations to the extent possible.	Implemented in building E design.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
38.	2019	A/75/135 , para. 225	The Board recommends that the strategic heritage plan team design all artificial lighting installations to cover lighting requirements while minimizing obtrusive light and energy use in order to set a good example for the defence of the night sky.	Implemented within new building H lighting.	The Board noted the Administration's response and considers this recommendation not to be implemented. The Board noted obtrusive light on the plaza and the parking space near the new permanent building H throughout the whole night.		X		
39.	2018	UNS-SHP-UNOG-2018-3, para. 66	The Board recommends that the strategic heritage plan team incorporate the design and programme changes procedure as an addendum to the programme manual.	This procedure is included in the strategic heritage plan programme manual.	The recommendation is considered to be implemented.	X			
40.	2017	A/73/157 , para. 282	The Board recommends that management enhance its efforts to mitigate the impact of its buildings on the natural environment through sustainable design and ensure that the contractor for the new building performs its work with the objective of fulfilling all environmental categories from the Leadership in Energy and Environmental Design (LEED) green building certification systems, as stipulated in the contract.	Strategic heritage plan team is following LEED recommendations with the contractor for the new building.	The recommendation is considered to be implemented.	X			

No.	Audit report year	Report reference	Board's recommendations	Management's response	Board's assessment	Status after verification			
						Implemented	Under implementation	Not implemented	Overtaken by events
41.	2017	A/73/157 , para. 316	The Board recommends that management update and calculate the applicable and potential rental income of premises based on current contracts, data and realistic assumptions, taking into account the number of relocated staff, appropriate rental cost (using the arm's length principle) and an updated funding key for the Office of the United Nations High Commissioner for Human Rights.	This is under implementation and targeted to be implemented by mid-2024. It cannot be fully implemented until the end of the implementation of the strategic heritage plan.	The recommendation is considered to be under implementation.		X		
42.	2017	A/73/157 , para. 318	Furthermore, the Board recommends that management charge the cost for maintenance and for safety and security for the new building proportionally to all potential users in accordance with their individual needs.	Under implementation, with targeted completion by the first quarter of 2024. It cannot be fully implemented until the end of the implementation of the strategic heritage plan.	The recommendation is considered to be under implementation.		X		
43.	2016	A/72/5 (Vol. I) and Corr.1, chap. II, para. 391	The Board recommends that: (a) the strategic heritage plan team finalize the parts of the programme manual related to the construction phase; and (b) the project owner approve and implement the programme manual.	Implemented (a). Under implementation (b) with the objective of having the recommendation implemented by the end of January 2022.	The recommendation is considered to be implemented.	X			
Total number of recommendations				43		39	4	0	0
Percentage of the total number of recommendations				100		91	9	0	0