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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 third report of the Board of Auditors on the strategic heritage plan of the United Nations Office at Geneva.

* [A/75/50](#).



Letter of transmittal

Letter dated 21 July 2020 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 third report of the Board of Auditors on the strategic heritage plan of the United Nations Office at Geneva.

(Signed) Kay **Scheller**
President of the German Federal Court of Auditors
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 to meet the requirements of the Organization and address health, safety and working conditions. The Office serves as a global centre for, inter alia, the Organization's activities related to sustainable development, humanitarian work, human rights, disarmament and disaster risk reduction. The United Nations Office at Geneva complex is the largest United Nations conference centre in Europe.

On 27 December 2013, the General Assembly adopted resolution [68/247 A](#), in which it concurred with the need to address the health, safety, usability and access conditions of the Palais des Nations. 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 thereon to the Assembly. Pursuant to that resolution, the Chair of the Advisory Committee requested the Board to consider the matter and to report on that matter to the 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. On 12 July 2018, the Board transmitted its second report on the strategic heritage plan ([A/73/157](#)). The Board also reported on the strategic heritage plan in its report on the financial statements of the United Nations for the year ended 31 December 2018 ([A/74/5 \(Vol. I\)](#)).

In its resolution [70/248 A](#), the General Assembly approved the proposed scope, schedule and estimated cost of the strategic heritage plan in the maximum amount of SwF 836.5 million. The project was then expected to be completed in 2023. It was planned to 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 his sixth annual report on the strategic heritage plan of 25 September 2019 ([A/74/452](#)), the Secretary-General informed the General Assembly that the works for the new building H would be completed in 2020 and that the full renovation works were projected to be completed in 2024.

The Board conducted audit visits to the United Nations Office at Geneva from 22 July to 1 August 2019, from 28 October to 15 November 2019 and from 13 to 31 January 2020 and to United Nations Headquarters in New York from 24 to 27 September 2019.

Introductory remarks

As at the most recent audit visit, the works on the new permanent building H had been progressively advancing in all building levels, including the façade, with a contractual completion date for the last section of work of July 2020. The construction firm has reported that it expects to complete the new permanent building H by October 2020.

With regard to the renovation of the Palais des Nations, the contract with the construction firm was concluded in November 2019 and the pre-construction services phase was ongoing at the time of the Board's most recent visit. The start of the renovation works has been scheduled for June 2020.

However, it remains a constant challenge for the strategic heritage plan team to ensure that the contractors fulfil their contractual obligations. The Board assumes that this situation may be further exacerbated by the coronavirus disease (COVID-19) pandemic.

The Board acknowledges that the strategic heritage plan team has made substantial progress in the construction of the new permanent building H and the design and tender procedure for the renovation 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 2020 to the Board's audit reports (A/74/5 (Vol. I), A/73/157, A/72/5 (Vol. I) and A/72/5 (Vol. I)/Corr.1). Of the 22 recommendations made, 14 (64 per cent) had been implemented, 6 (27 per cent) were under implementation and 2 (9 per cent) had been overtaken by events, as indicated in annex II.

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. The United Nations Office at Geneva accepted the recommendations and agreed to take appropriate action.

Key findings

The Board's key findings are summarized below.

Project governance

According to reports of the independent risk management firm, the chance of delivering the strategic heritage plan programme within the available budget declined from 66 per cent in August 2018 to 23 per cent in April 2020. As three of the top risks related to the guaranteed maximum price and contractual terms in the contract for the renovation of the historic buildings to be agreed upon at the end of the pre-construction services, these risks needed further urgent and major efforts for mitigation.

The monthly report to the project owner includes an "earned value" chart to provide actual and forecast information on project performance. The chart needs an adequate explanation and a forecast of the actual cost separately for each construction phase.

Contracting strategy for the renovation work

The tender documents for the renovation work of the historic buildings comprised the full technical design, a cost plan indicating quantities and a draft contract. The pre-qualified firms were required to submit a proposal with a guaranteed maximum price for the works. In case the quantities or the price of the works turned out to be higher than estimated, the contractor would have to bear the extra costs. The firms stated that they were unable, in the time allocated during the tender phase, to work with their supply chain and calculate to a sufficient level of detail the costs and risks of such a major renovation project. Hence, they could not offer a guaranteed maximum price without additional time and preparatory work. In response to the vendors' concerns and to ensure a sufficient number of best-value-for-money offers, management refined the guaranteed maximum price contracting strategy by including a pre-construction services phase of six months in the draft contract. A guaranteed maximum price was not set at the time the contract was concluded but would be agreed on prior to the commencement of construction works by the completion of the pre-

construction phase. The firms' responses made clear that the risks to be borne by the contractor and its opportunities to control and assess the risks need to be balanced to ensure a sufficient number of competitive bids.

Project scheduling

In its reports on the strategic heritage project for the years 2017 (A/72/5 (Vol. I) and A/72/5 (Vol. I)/Corr.1), 2018 (A/73/157) and 2019 (A/74/5 (Vol. I)), the Board pointed out assumptions in the project's schedule that the Board considered to be very optimistic. The assumptions concerned the time periods for the construction of the new building, for the design of the renovation of the historic buildings and for the procurement of the renovation work for the historic buildings and the date for the overall completion of the project. The Board noted that those assumptions have in fact turned out not to be realistic. The periods lasted longer than assumed and the date for the overall completion of the project had to be postponed. The Board holds that it is important that the project scheduling be based on realistic assumptions and oriented towards achievable objectives. If the achievable objectives deviate from those that had to be achieved originally, this should be communicated in a transparent and timely manner.

Building information modelling

Building information modelling is a method which allows a profound use of computer technology in the design, engineering, construction and operation of built facilities. This method also aims to provide a seamless link between the project owner, designers, construction professionals, contractor and end users of a construction project.

Building information modelling has already been in use for the strategic heritage plan project for almost five years. The United Nations Office at Geneva has not yet defined which benefits could be achieved by applying building information modelling beyond the construction phase, such as how to use and maintain the building information model for operational and maintenance issues. A strategy on how to apply building information modelling for the long post-construction phase of maintenance would support an efficient and target-oriented implementation of the building information modelling.

The strategic heritage plan did not document whether the building information models for the new permanent building H had been approved at the end of the concept design and detail design stage. The contract with the design firm did not specify the level of detail that the building information models should have reached at the end of each design stage. The strategic heritage plan team agreed that the design firm transferred not only the building information models but also the primary responsibility for their quality to the construction firm.

Energy savings

The Secretary-General underlined the importance of updating the building exterior and electromechanical systems to reduce the cost of energy consumption. The Board noted that the strategic heritage plan project team, inter alia, adjusted the baseline energy consumption by considering only the main buildings of the Palais des Nations (and thus excluding Motta and Wilson); determined 2015 as the baseline energy consumption year by considering the energy savings already achieved through other energy-saving measures, and consequently adjusted the energy savings target; and updated the calculations for the new permanent building H related to the expected energy consumption.

These are important steps taken so far. Nevertheless, the Board reviewed the new calculations and would like to point out a few aspects of the strategic heritage plan team's approach to calculating the energy savings.

Flexible workplace strategies

The flexible workplace strategies allow for an increased use of workspaces, which results in a higher number of occupants or staff using the workspaces than the actual number of workspaces provided. The terms "workspaces" and "staff" were used differently, drawing attention to different mindsets when reporting on the capacity of the buildings in the annual progress reports on the strategic heritage plan.

Since his fourth annual progress report (A/72/521), the Secretary-General has not informed the General Assembly about the number of workspaces and occupants in his annual progress reports.

Number of fire exits in the new permanent building H

The total number of persons using level 6 and the town hall lobby on level 2 might exceed the maximum number allowed by Swiss fire standards. Additional fire exits might be required to safely operate the new permanent building H.

Sustainability

The embodied carbon emissions of building products and construction represent a significant portion of global emission. Analysis shows that the proportion of embodied energy in relation to that of regulated operational energy is more than 50 per cent in most new buildings. Life cycle assessment can be used as a tool to calculate the environmental impacts and the embodied carbon emission of a building. A careful analysis at the beginning of the design process should be done to ensure that embodied carbon is reduced overall.

The strategic heritage plan team did not identify all the carbon "hotspots", that is, materials or systems that contribute the most to embodied emissions. If the strategic heritage plan team had analysed the environmental hotspots using a life cycle assessment at the beginning of the design process, it would have identified more lower-embodied-carbon materials for the new permanent building H.

Potential alternative sources of project financing

The reports, requests and supplementary information on valorization to the General Assembly, the Fifth Committee and the Advisory Committee on Administrative and Budgetary Questions differed partially in scope, detail and wording. All relevant information on valorization needed to be coherently outlined in one document to inform stakeholders.

Main recommendations

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

Project governance

(a) **Develop additional mitigation strategies in case the guaranteed maximum price value will be higher than assumed;**

(b) **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;**

Contracting strategy for the renovation work

(c) **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 in an appropriate way. 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;**

Project scheduling

(d) **Continue its efforts to determine and communicate a robust project schedule by avoiding over-optimistic time frames;**

Building information modelling

(e) **Define and document a forward-oriented transversal strategy on how the building information modelling method would support the United Nations Office at Geneva throughout the entire lifetime of the buildings of the Palais des Nations;**

(f) **Document the design progress and quality of the digital models at the end of each design stage by approving the respective digital building models for the rest of the strategic heritage plan project;**

(g) **Continue to link the responsibility for the quality of the building information models with their respective providers at all design and construction stages, at least for the renovation of building E;**

Energy savings

(h) **Conduct further detailed review and continue to further refine the calculation of energy-saving measures and expected energy use;**

Flexible workplace strategies

(i) **Report on the projected number of occupants following the implementation of the strategic heritage plan in each annual progress report of the Secretary-General;**

(j) **Report on the projected number of workspaces following the implementation of the strategic heritage plan in each annual progress report of the Secretary-General;**

Number of fire exits in the new permanent building H

(k) **Assess whether the number of fire exits, particularly on level 6 and for the town hall stairs, remains compliant with the number of allowed persons during the operational phase of the building;**

Sustainability

(l) **Assess and apply measures to lower carbon emissions when planning and constructing future buildings, thereby also taking a life cycle assessment into account;**

Potential alternative sources of project financing

(m) Summarize all relevant information on valorization, including the supplementary information provided to the Advisory Committee on Administrative and Budgetary Questions and the Fifth Committee (excluding commercially sensitive information), in a structured, concise and coherent document, update it, if necessary, in the course of time and use this document as a basis to confidentially inform the General Assembly and other stakeholders.

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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 of Auditors to provide oversight assurance and to report annually on the matter to the Assembly.

3. Pursuant to the above-mentioned resolution, the Chair of the Advisory Committee 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. On 12 July 2018, the Board's second report on the strategic heritage plan was issued ([A/73/157](#)). The Board reported its findings and recommendations of the intervening years, 2017 and 2019, in its reports on the financial statements of the United Nations for the year ended 31 December 2016 (see [A/72/5 \(Vol. I\)](#) and [A/72/5 \(Vol. I\)/Corr.1](#), chap. II, sect. L) and for the year ended 31 December 2018 (see [A/74/5 \(Vol. I\)](#), chap. II, sect. K).

5. The Board conducted its audit visits to the United Nations Office at Geneva from 22 July to 1 August 2019, from 28 October to 15 November 2019 and from 13 to

31 January 2020 and to United Nations Headquarters in New York from 24 to 27 September 2019.

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 minor maintenance and repairs that were considered necessary for the Office's operations. Such limited maintenance over time has resulted in an 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 Palais des Nations buildings 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.

Key objectives of the project

8. The key objectives of the strategic heritage plan 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 safety and compliance with the building code;

(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 consumption and 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 of, prevent irreversible deterioration or damage to, and to restore and maintain the capital value of the Palais des Nations and its contents.

Annual progress report of the Secretary-General

9. The latest progress report of the Secretary-General on the strategic heritage plan of the United Nations Office at Geneva ([A/74/452](#)) is the sixth 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 2018 and 31 August 2019.

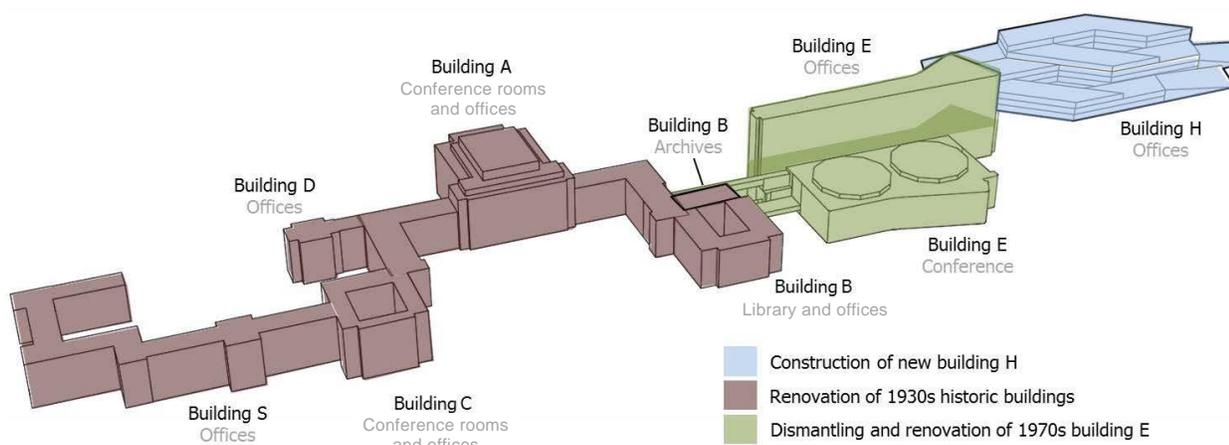
10. Having considered the sixth annual progress report on the strategic heritage plan and the related report of the Advisory Committee (A/74/7/Add.13), the General Assembly decided in its resolution 74/263 A to appropriate the amount of \$36,799,600 (equivalent to SwF 36,505,200) for 2020 and to revert to the question of the scheme of assessment for the remainder of the project at its seventy-fifth session.

Background

11. According to the project schedule (see also annex I to the present document for the schedules of project implementation of September 2015, October 2017 and February 2020), the strategic heritage plan construction work consists of three main sections: 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 and the new permanent building H



Source: Sixth annual progress report of the Secretary-General (A/74/452).

12. The schedules of these three main sections are interdependent. The project phasing needs to ensure that both a minimum of office space and a minimum of conference space will be kept operational throughout the entire project.

13. In terms of office space, the strategic heritage plan team intends to use the offices of the new permanent building H as swing space for the staff who will have to leave the offices of buildings C, D and S during the renovation work. The offices of buildings C, D, H and S are intended to compensate for the decrease of office space that will result from the dismantling of the building E office tower and the incorporation of the staff of the Office of the United Nations High Commissioner for Human Rights into the Palais. Therefore, the renovation work for buildings C, D and S is scheduled to start after the completion of the new permanent building H work. Accordingly, the work on building E is scheduled to start after the completion of the work on buildings C, D and S.

14. In order to provide the conference space needed, the renovation of parts of building A and the renovation of building C will not start before certain other parts of building A, including the assembly hall, have been renovated. The renovation of

building E will not start before building C and other parts of building A have been renovated.

15. To provide sufficient conference space, the United Nations Office at Geneva bought a temporary conference building for approximately SwF 10 million. This building has the capacity to host up to 600 participants.

16. As reported at the time of the Board's second report ([A/73/157](#), para. 119), the Office no longer had any buffer time to meet the completion date of the strategic heritage plan approved by the General Assembly, which is 2023. As a consequence, the Board indicated areas of concern that had implications for both timely completion of the project and its overall costs.

Planned and actual project progress

17. During the course of the audit, the Board reviewed the planned and actual project progress and made the observations below.

Delays in the construction of the new permanent building H

18. As already stated in the Board's second report ([A/73/157](#), para. 108), the contractual completion date initially agreed for the new permanent building H was 29 November 2019 and was extended until 13 January 2020 because of ground-related issues that required an additional retaining wall and the reinforcement of a crane base.

19. Subsequently, the United Nations Office at Geneva and the contractor agreed on further modifications to the contractual completion date with regard to the replacement of precast concrete beams with timber beams and further ground issues that required additional ground investigations and a redesign of the foundations. The parties agreed on 2 March 2020 as the revised contractual completion date.

20. As expected (see [A/73/157](#), paras. 99 and 109 ff.), another extension of the contractual completion date arose owing to the incorporation of flexible workplace strategies into the construction contract for the new permanent building H. In order to mitigate the time impact of this change, the United Nations Office at Geneva and the contractor agreed upon a staged handover procedure, meaning that there should be different completion dates for different parts of the new permanent building H as follows:

Works for levels 1 and 2: 15 April 2020

Works for levels 3 and 4: 29 May 2020

Works for levels 5 and 6: 15 July 2020

21. Considering the actual progress on the building site during the audit visit in January 2020, the Board deemed it almost impossible that the new permanent building H would be finished by the contractual completion date in July 2020.

22. The strategic heritage plan team had also assessed that the contractor might be unable to complete the work in accordance with the contractual date and had received a notification from the construction firm containing an estimate of the completion of levels 5 and 6 by 5 October 2020.

23. However, given the sequencing of the renovation schedule, with work on the conference rooms beginning before the work on the offices, the strategic heritage plan team assessed that the delays regarding the new permanent building H would not have an impact on the date for the overall completion of the project (see also [A/74/452](#), para. 52). As described above, the new permanent building H is intended to be used as a swing space and therefore the renovation work will not start until after the

completion of the new building. However, for the reasons described below, the renovation of the offices in the historic buildings could not have started anyway, even if the new building H had been completed on the contractual date.

24. Nonetheless, the Board holds that the delay in completing the new permanent building H may have at least a financial impact in terms of lost rental income: the later the new building will be completed, the later there is a chance of realizing rental income from extrabudgetary-funded entities (see also [A/72/521](#), para. 124).

25. Moreover, the risk analysis of February 2020 by the risk management firm indicated that there was an 80 per cent chance that the completion would even be delayed by up to January 2021.

26. On 19 March 2020, the local government, Geneva Canton, instructed that all construction sites on the Geneva administrative territory should be closed until 19 April 2020. Consequently, the construction work was suspended from 23 March 2020 to combat the spread of the coronavirus disease (COVID-19) and resumed on 29 April 2020.

Delays in the design, procurement and start of the renovation works for the 1930s and 1950s historic buildings

27. As reported by the Board ([A/73/157](#), para. 124), the strategic heritage plan team intended to issue the complete request for proposal for the construction contract for the 1930s and 1950s historic buildings by 3 September 2018 in order to award the contract by 3 May 2019. The renovation work was scheduled to start in July 2019 and to end in November 2022.

28. The first package of documents of the request for proposal, including most of the technical drawings and specifications, was issued on 23 January 2019. A second package, including further technical documents, was issued on 6 February 2019. The final package of the request for proposal documents, including a draft contract and a cost plan as a basis for the bidders' pricing, was issued on 21 February 2019.

29. One reason for the delayed issuance of the request for proposal was that the necessary design deliverables had been provided late by the design firm (see [A/73/157](#), paras. 121 ff. on the tightness of the design schedule).

30. Moreover, the strategic heritage plan team had chosen to address the limited response to the expression of interest process by following an innovative procurement methodology (limited competitive bidding process) and contracting strategy (with a guaranteed maximum price and incentive "pain/gain" mechanism). By following these strategies, the United Nations Office at Geneva wanted to ensure, among other things, the full engagement of the prequalified vendors throughout the request for proposal process in order to obtain competitive proposals.

31. In addition, the envisaged date for the start of the renovation work was postponed owing to the incorporation of the pre-construction services period of six months into the construction contract (see paras. 87–101 below for details).

32. The contract for the renovation work was concluded in November 2019. According to the contract, the construction works are scheduled to start after establishing the guaranteed maximum price further to the pre-construction services period, which is scheduled to last six months. The contract data state that the time for completing the whole of the works is, indicatively, 46 months after the date of the contract, which would mean completion in September 2023.

33. Although the contract for the renovation work for the 1930s and 1950s historic buildings has been signed, crucial subjects of the contract still need to be negotiated by the end of the pre-construction services phase, such as the guaranteed maximum

price and the unallocated portions of the risk allowance, including the terms for its usage. Since those subjects have direct impacts on profitability and the project costs, the negotiations could turn out to be difficult.

34. The Board holds that there is a risk that the negotiations will either fail or take longer than planned or will result in an agreement that has negative effects on the scope, the time schedule and/or the costs of the project (see also paras. 57–62 below on the need for strategies to mitigate that risk).

35. The pre-construction services phase, comprising further surveys and extensive project planning by the contractor, may help to reduce the execution risk from, for example, unexpected constraints in the structure of the historic buildings or an insufficient coordination of subcontractors. However, such risks will not be eliminated completely. Other general risks also continue to exist, such as risks of design errors, poor performance by the contractor, conflicts with the conferencing schedule and changes in stakeholder requirements.

36. Hence, the risk report of February 2020 issued by the risk management firm indicated some concerns that the agreement of the pre-construction services might not be achieved by the contractor by 15 May 2020.

37. The extent of the impact of the COVID-19 pandemic on the renovation of the historic buildings could not be determined at the time of writing. However, at least the performance of the pre-construction services for the historic buildings by the contractor, who is based mainly in northern Italy, is very likely to be delayed.

Delays in the renovation of the 1970s building E

38. The renovation work for the 1970s building E, including the dismantling of its office tower, will be the last section of the strategic heritage plan works.

39. As a lesson learned from the procurement of the renovation work for the 1930s historic buildings, the work contract for building E will also comprise a pre-construction services period. During this period, which is scheduled to last 12 months, the contractor will also provide the technical design (“design and build” contract).

40. Based on that approach, the request for expression of interest for the renovation work contract was to start in February 2020 and the contract should be signed in August 2021. Accordingly, the renovation work itself was scheduled from August 2022 to August 2024.

41. The request for expression of interest could not be issued in February 2020. Instead, the issuance was then expected for May 2020.

42. The fact that the request for expression of interest for the renovation of building E will be issued later than scheduled in January 2020 will not necessarily entail a later-than-planned completion of the renovation work. However, the strategic heritage team will have to strengthen its efforts to avoid further schedule slippages and to identify opportunities to accelerate procedures.

Current schedule and scheduled risks

43. In conclusion, it appears that the main deviations between the 2020 schedule and the previous schedules resulted from the extension of the construction period for the new permanent building H, the postponement of the start of the renovation work for the 1930s historic buildings and the postponement of the start of the tender process for building E. The delayed start of the renovation work for the 1930s historic buildings led to a postponement of the overall completion date.

44. Since the project schedule does not include a significant time buffer, further delays in the works for the new permanent building H, the 1930s historic buildings or building E might result in the overall completion date of the current schedule, which is August 2024, not being met.

45. Accordingly, in its report of February 2020, the risk management firm forecast that the completion for the strategic heritage plan project at the P80 confidence level would be in May 2025.

Project budget and costs

46. In its resolution [70/248 A](#) of 23 December 2015, the General Assembly approved the proposed scope, schedule and estimated cost of the strategic heritage plan in the maximum amount of SwF 836,500,000 for the period 2014–2023. The resolution is based on the second annual progress report of the Secretary-General on the strategic heritage plan ([A/70/394](#) and [A/70/394/Corr.1](#)), which is therefore considered to be the baseline report for the strategic heritage plan project.

47. Since 2015, the estimated and approved cost of the strategic heritage plan totalling SwF 836,500,000 has been reconfirmed annually by the General Assembly.

48. At the end of December 2019, the total expenditures of the strategic heritage plan reached SwF 171,317,852. That amount represents 43 per cent of the projected expenditure of SwF 397,150,500 up to the end of 2019 (forecast in document [A/70/394](#) and [A/70/394/Corr.1](#)), and 20 per cent of the total approved costs of SwF 836,500,000.

49. In 2015, the overall projected amount for contingencies and escalation was SwF 143,997,600 for the project duration from 2015 to 2023. In 2019, the projected amount for contingencies and escalation amounted to SwF 57,668,000 for the remaining project duration from 2019 to 2025. The residual amount of SwF 57.7 million represents the allowance available for potential future cost increases as at September 2019.

50. The Board holds that the remaining contingency against the value of the work remaining is low, particularly with regard to the upcoming renovation of the Palais des Nations, which inevitably includes unforeseen works resulting in additional costs.

Conclusion

51. Based on the information in February 2020, the Board expresses its concern for both the timely completion of the project and its overall costs. The Board holds that the strategic heritage plan team should address this as a priority issue.

C. 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 January 2020 to the Board's audit reports ([A/74/5 \(Vol. I\)](#), [A/73/157](#), [A/72/5 \(Vol. I\)](#) and [A/72/5 \(Vol. I\)/Corr.1](#)). Of the 22 recommendations made on the strategic heritage plan in the Board's reports, 14 (64 per cent) had been implemented, 6 (27 per cent) were under implementation and 2 (9 per cent) had been overtaken by events. 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. Project governance

53. The Overseas Property Management Unit within the Office of Central Support Services developed guidelines for managing construction projects for implementing large-scale construction projects. In 2016, the guidelines were completed and issued to Headquarters and offices away from Headquarters (A/70/697, para. 23).

54. These guidelines give detailed information on risk reporting. Pursuant to chapter 9.6.7 of the guidelines, a project contingency allowance should be held in reserve for risks that occur and require financial mitigation.

Risk management

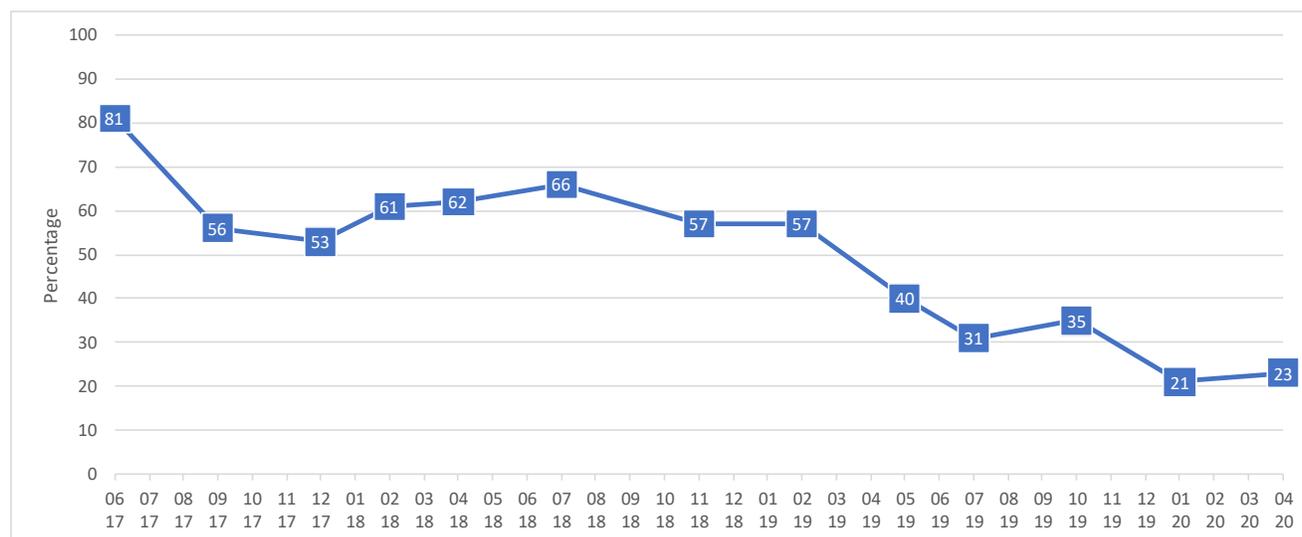
55. The strategic heritage plan project determines the contingency allowance in two different ways:

(a) 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. The residual represents the amount of contingency (budgeted contingency);

(b) Independent of the strategic heritage plan team, the independent risk management firm determines the contingency amount with an iterative risk analysis. The independent risk management firm simulates a probabilistic risk model and provides the overall probabilistic cost exposure based on the estimated costs of the current risks and uncertainties relating to the project. The independent risk management firm calculates the recommended level of contingency provision (on top of the base cost estimate) required to complete the full scope of the project. The confidence level (or chance) of completing the strategic heritage plan within the budget is reported in the risk management quarterly reports.

56. According to the risk management quarterly reports since June 2017, the evolution of the confidence level of completing the project within the budget is as shown in figure II.

Figure II
Evolution of the chance of delivering the strategic heritage plan project within the budget, June 2017–April 2020



Source: Board of Auditors.

Mitigation of risks to the renovation of the Palais des Nations

57. The Board noted that, since August 2018, the chance of delivering the strategic heritage plan programme within the available budget had declined almost continuously from 66 per cent to 23 per cent.

58. In April 2020, the risk management quarterly report No. 4 (2019/2020) indicated a 23 per cent chance of completing the project within the budget, an estimate of contingency required by the risk firm of SwF 77.503 million and a forecast overspend of SwF 33.490 million, compared with an estimate of contingency required by the project team of SwF 70.527 million and a forecast overspend of SwF 26.379 million.

59. Furthermore, the report ranked 10 top risks to the programme. The Board noted that, of the five risks to the “renovation” programme area, three directly or indirectly related to the guaranteed maximum price and contractual terms in the contract for the renovation of the historic buildings that are to be agreed at the end of the pre-construction services. The risks were:

(a) Delay in agreeing on a guaranteed maximum price or withdrawal from contract due to no agreement (REN1-1478);

(b) Errors/omissions in bid pricing/adjustments (REN1-1482): anticipated savings in the tender proposal might not be justified;

(c) Undocumented repairs (REN1-1489): the contents of the renovation tender were based on the technical design and associated drawings, which might not include all of the works required in the renovation, such as miscellaneous repairs to the fabric and structure of the existing buildings which are likely to be uncovered as further surveys are undertaken and the buildings are opened up during the course of the works.

60. The Board sees the following risks:

(a) The guaranteed maximum price value and contractual terms still to be concluded in the renovation contract will depend mainly on the extent of the renovation work to be performed. The pre-construction services may uncover undocumented repairs. Consequently, the quantity of the renovation works may increase;

(b) Even at the completion of the pre-construction services phase, undocumented repairs may have remained uncovered and the full scope of the renovation work to be provided will emerge only when the actual renovation works are carried out. The contractor may not be ready to bear this risk without additional compensation;

(c) Finally, anticipated savings in the tender proposal may not be realized.

61. Considering these risks, the value of the guaranteed maximum price might be higher than assumed when the renovation contract was concluded. The Board sees, in principle, three possible scenarios at the completion of the pre-construction services phase:

(a) The guaranteed maximum price agreement will not be concluded (because, for instance, the guaranteed maximum price demanded by the general contractor is so high that the strategic heritage plan cannot afford it);

(b) An agreement on the guaranteed maximum price and contractual terms will require more negotiations;

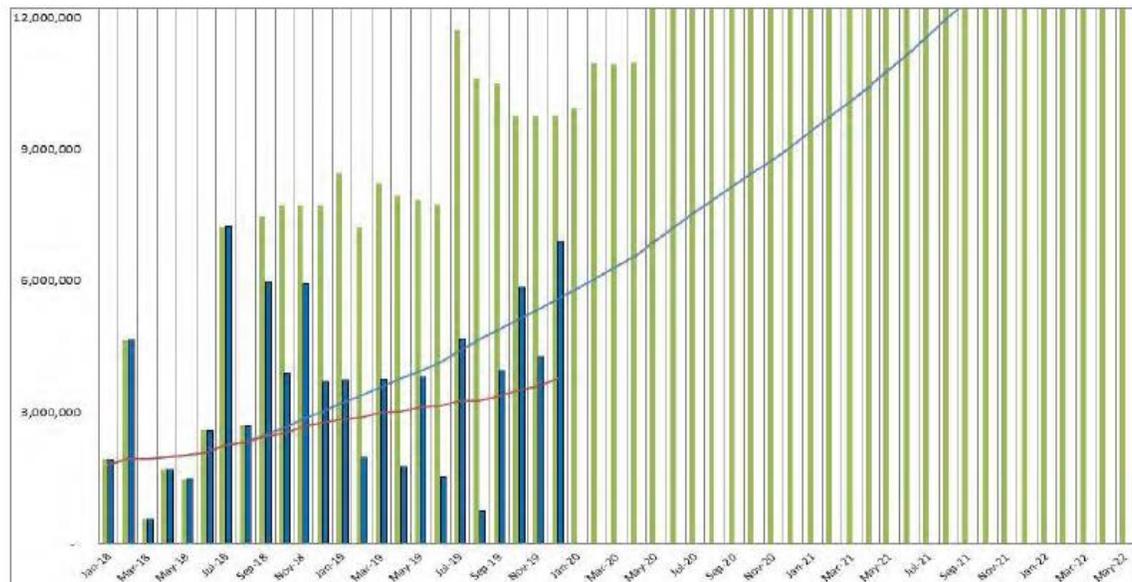
(c) Agreement on the guaranteed maximum price.

62. The first and second scenarios would lead to long delays and much higher costs of the programme.
63. Although the Board recognizes that the strategic heritage plan team has already been focusing on renovation risks, the Board holds that the mitigation measures already taken are not yet sufficient. The Board also holds that the risks in the “renovation” programme area need further urgent and major efforts for mitigation, such as consideration of fallback options.
- 64. The Board recommends that the United Nations Office at Geneva develop additional mitigation strategies in case the guaranteed maximum price value will be higher than assumed.**
65. Management accepts the recommendation and acknowledges the falling confidence level forecast by the risk management firm of completing the approved strategic heritage plan scope within the approved budget. With regard to fallback options in the event that the guaranteed maximum price proposed for the historic building is higher than budgeted, the United Nations Office at Geneva would, pursuant to resolution 70/248, section X, paragraph 5, need to present options to the General Assembly for its approval prior to implementing reductions to the strategic heritage plan scope.

Earned value analysis

66. Pursuant to chapter 11.4 of the guidelines for the management of construction projects, earned value analyses can be used to determine the performance of the project.
67. The strategic heritage plan team reports on the earned value of the strategic heritage plan to the project owner, the project executive and the Global Asset Management Policy Service in New York in the monthly reports.
68. Earned value analysis is an industry-standard project management technique for evaluating project performance at a given point in time. It is based on comparing the progress and cost of work packages to the plan.
69. Earned value analysis uses three key pieces of project information:
- (a) The planned value, which is the budgeted cost for the work scheduled to be done;
 - (b) The actual cost, which is the money spent for the work so far accomplished;
 - (c) The earned value, which is calculated by multiplying the budget for an activity or work package by the percentage of progress to date.
70. The Board assessed the “earned value curve” chart from the monthly report No. 59 (December 2019). As the project will end later than March 2022 and will cost more than SwF 12 million, the chart shows only a part of the whole project.

Figure III
Earned value curve



Source: Monthly report No. 59 (December 2019) of the strategic heritage plan.

71. The Board notes the following in the “earned value curve” chart:

(a) The blue curve represents the planned value. This curve is the cumulative planned cost for the work planned to be done on the project up to a given point in time. The curve corresponds to the light green columns in the chart, as these amounts are planned to be spent at certain points in time;

(b) The red curve for the actual cost shows the cumulative actual cost spent on the project up to a given point in time, including all accrued cost on the work done. The red curve corresponds to the dark blue columns in the chart, as these are amounts actually spent at certain points in time;

(c) No curve is drawn or labelled as earned value. An earned value curve would represent the cumulative percentage of work done up to a point in time, expressed in cost units;

(d) There is no legend on the chart.

72. The Board learned that the red curve would represent the actual cost and the earned value. Pursuant to the construction contract, the contractor would be paid on the basis of the percentage of scope delivered on site, as evidenced by the certification of the quantity surveyors. Therefore, the percentage of contract scope achieved to date would, in practice, be the same as the percentage of contract cost incurred to date.

73. The Board holds that it is important to clearly communicate scope, schedule and cost status information to project stakeholders. As there is no legend or other explanation added to the chart in the monthly report, a user cannot identify the meaning of curves and columns. The chart needs adequate explanation so that a user can understand and benefit from the information offered.

74. The Board recommends that the strategic heritage plan team add a legend or other explanation to the chart.

75. Management accepts the recommendation and agrees to include a legend in the monthly reports.
76. Furthermore, the chart does not present a forecast of the future actual cost.
77. The Board holds that extending the red curve in the chart with a forecast of the actual cost would also allow users to understand the slippage in the project schedule for the future. The slippage would be the difference on the timeline between the time of a certain amount on the blue curve and the time of the same amount on the (extended) red curve.
- 78. The Board recommends that the strategic heritage plan team extend the curve for actual cost in the chart with a forecast of the actual cost and mark the occurred slippage in the project schedule at the time of the monthly report.**
79. Management accepts the recommendation and intends to investigate the best way to incorporate a meaningful forecast curve on a cost-effective basis each month.
80. Overall, the strategic heritage plan will run for more than 10 years through multiple design and construction phases for the new permanent building H and the Palais des Nations. For staff and contractors working thereon, the construction contracts “New permanent building”, “Historic buildings (A, B, C, D and S)” and “Building E (including demolition of tower)” are separate projects.
81. The Board holds that users of the monthly project reports would be in a better position to assess project performance if the results of the analysis were reported for each contract phase separately.
- 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.**
83. Management accepts the recommendation and will model the project status at the level of the individual construction contracts separately in the project status section of the monthly report.
84. The Board holds that also the General Assembly would benefit from the updated project status charts in the report of the Secretary-General.
- 85. The Board recommends that the United Nations Office at Geneva incorporate project status charts in the report to the General Assembly.**
86. Management accepts the recommendation.

3. Contracting strategy for the renovation work

87. As reported by the Board ([A/73/157](#), paras. 111–115), management changed the implementation strategy for the renovation work of the historic buildings. The new implementation strategy was to bring the design for all renovation works of the historic buildings A, B1, B2, C, D and S to the level of full technical design before the tendering of the work itself. In doing so, management followed a more traditional “design-bid-build approach” instead of a “design and build” approach, in which the technical design is provided by the contractor for the renovation work. Management argued that the change in the implementation strategy would be of great benefit as a means of, inter alia, providing more competitive bids ([A/72/521](#), para. 60).
88. The market response to the pre-qualification process for the renovation work was muted. Only a limited number of vendors pre-qualified. That entailed a considerable risk that no suitable vendor would submit an acceptable bid. To address this risk and to ensure the full engagement of the pre-qualified vendors throughout

the request for proposal process, management used an innovative procurement and contracting methodology. After approval of the Assistant Secretary-General of the Office of Central Support Services, management conducted a limited competitive bidding process which included individual competitive dialogue sessions, separately with each of the bidders, and the submission and evaluation of an interim proposal.

89. Moreover, management decided that the contracting strategy should follow an open-book approach with a guaranteed maximum price and a “pain/gain” incentive arrangement. A guaranteed maximum price agreement transfers risks for delivering the project within the price envelope from the United Nations to the contractor. If the actual cost of the work is higher than the guaranteed maximum price, the contractor must bear the additional cost. Typically, this is a mechanism used on construction projects where the contractor is in a better position to oversee and control costs.

90. In preparing their interim proposals, bidders were expected to examine in detail all documents of the request for proposal, which comprised, among many other documents, more than 2,000 drawings, a cost plan and a draft contract of more than 100 pages. The initial time period from the completion of the request for proposal documents to the deadline for bidders to submit the interim proposals should have been about two months. The final proposals were to be submitted about one month later.

91. Some pre-qualified vendors withdrew from the tender process. As part of the dialogue process and in their correspondence with the United Nations Office at Geneva, the remaining vendors expressed some reservations about the guaranteed maximum price contract proposed for the project.

92. Vendors stated that they could not accept the risk associated with the single-step guaranteed maximum price contract type, as the renovation of an old building at approximately SwF 250 million involved an unreasonable risk allocation. Vendors stated that they could commit themselves only to what was identifiable and quantifiable. Vendors stressed that they needed further opportunities to validate the cost plan, the specifications and the drawings by, among other things, on-site verifications and surveys before they could commit themselves to a guaranteed maximum price.

93. In response to the vendors’ concerns, management modified its contracting strategy. In May 2019, management incorporated a second step to obtain a guaranteed maximum price by adding a pre-construction services period into the construction work contract. During that phase, the contractor would work with the United Nations to procure the subcontractors, suppliers and/or consultants. The first phase of construction work would not start until the guaranteed maximum price was agreed to. The planned date for completing the construction work was postponed accordingly. At the date of contract signature, which was 15 November 2019, the fees for the pre-construction services, overhead and profits and preliminaries were fixed, whereby the guaranteed maximum price would be fixed after the pre-construction services phase. According to the contract, the guaranteed maximum price is to be memorialized by the parties by way of an amendment to the contract. The parties shall use best efforts to agree on a guaranteed maximum price within six months of the date of the contract.

94. The Board noted that the vendors’ replies underlined that potential contractors need a sound basis for calculating their prices.

95. The Board holds that there are several approaches to ensuring that construction firms can determine their prices properly. One approach is to release the contractor from certain risks. Another approach is to enable firms to control or at least fully assess the risks. For example, one type of contract which releases a contractor from

certain risks is referred to as a unit price contract, (re)measurement contract or priced contract with bill of quantities. Such a contract includes a bill of quantities that provides estimated quantities of the items of work identified by the drawings and specifications in the tender documentation. The parties agree on prices per unit of the respective items (e.g. 1 m of a specific pipework or 1 m³ of excavated soil). The actual payment is determined by the number of units actually required multiplied by the respective unit prices. If more units are required than estimated, the United Nations needs to pay for the additional units on the basis of the agreed price per unit. Consequently, the United Nations takes the risk that its estimations on quantities turn out not to be realistic. The contractor retains the risk that its actual costs per unit turn out to be higher.

96. Other types of contracts put a contractor in a better position to control and assess risks. One example is a “design and build” approach, whereby the contractor is responsible for the technical design. An extensive pre-construction phase that enables a contractor to become familiar with the project risks and to improve the design can also be a good basis for a more accurate price calculation.

97. Which contracting strategy suits best needs to be weighed on a case-by-case basis. However, in the Board’s opinion, a strategy whereby the contractor shall bear most of the risks without being able to control and to properly assess those risks should be avoided, as this can entail disadvantages, such as dissuading firms from submitting bids or including extensive risk premiums in the price.

98. With regard to the initial contracting strategy of the request for proposal, hindsight shows that the balance of the risks to be borne by the contractor and its opportunities to control and assess the risks were not attractive to the market. The contractor’s means to control and assess the risks were rather constrained, since the strategic heritage plan team provided most of the design and the estimates of quantities. Furthermore, the time period initially permitted for the bidders to familiarize themselves with the extensive request for proposal documents and the project was fairly limited. However, the bidders were requested to take the risk on a guaranteed maximum price that would not be adjusted in case the estimated quantities would be exceeded.

99. The Board holds that the decision to modify the contract strategy to implement a two-staged approach whereby the guaranteed maximum price would be fixed after a pre-construction services phase meant that the contractors’ risks and opportunities were better balanced than in the initial approach. However, this contracting approach entails specific challenges, as various subjects still need to be negotiated after the actual conclusion of the contract.

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 in an appropriate way. 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.

101. Management accepts the recommendation and agrees that the revised contracting strategy resulted in a better contractual balance. Management further believes that its adoption was an essential enabler facilitating the successful completion of the tender process and the competitive selection of a well-qualified contractor. Management has already undertaken a lessons learned exercise to incorporate this experience into the contracting strategy for the renovation of building E.

4. Project scheduling

102. In its reports on the strategic heritage project for the years 2017 ([A/72/5 \(Vol. I\)](#) and [A/72/5 \(Vol. I\)/Corr.1](#)), 2018 ([A/73/157](#)) and 2019 ([A/74/5 \(Vol. I\)](#)), the Board pointed out assumptions in the project's schedule that the Board considered to be very optimistic. These assumptions concerned the following crucial activities:

(a) The construction period for the new permanent building H was reduced from 30 months to 27 months, based on the contractor's offer to do it in a shorter period; the Board expressed its opinion that, among other things, the possibility of unexpected circumstances was not taken into account in this reduced schedule ([A/72/5 \(Vol. I\)](#) and [A/72/5 \(Vol. I\)/Corr.1](#), paras. 409–411);

(b) The period for the technical design and tender documentation for the historic buildings B2, C, D and S of less than six months; the Board saw a high risk of not meeting the tight schedule, in view of the delays in the design for buildings A and B1 and the fact that the performance period for technical design for buildings B2, C, D and S had been originally estimated to last eight months ([A/73/157](#), paras. 126 and 132);

(c) The duration of the procurement procedure for renovating the historic buildings, that is, the time period from the issuance of the request for proposal to the start of works, was reduced from 301 days to 250 days; the Board stated that the duration of the further procurement procedure for renovating the historic buildings appeared rather short, taking into account that there would be intensive dialogues with the bidders ([A/74/5 \(Vol. I\)](#), paras. 501, 502 and 508);

(d) The overall completion of the project by the end of 2023; the Board reasoned that the project phasing plan of January 2019, which still indicated an overall completion in 2023, might prove to be difficult with regard to the procurement procedure for renovating the historic buildings, the envisaged staged takeover procedure for building H and the lacking buffers, for example for unexpected constraints related to the structure of the historic buildings (*ibid.*, paras. 507–509).

103. The Board noted that these assumptions had indeed turned out to be optimistic in the project's schedule:

(a) According to the amended contractual completion date of 15 July 2020, the construction period for the new permanent building H would be at least 34 months instead of 27 months. One reason for extending the construction period was a modification of the interior layouts to implement flexible workplace arrangements. Another reason was the unexpected soil conditions that necessitated further ground investigations and a redesign of the foundations of the building. The strategic heritage plan's current assessment is that the contractor will be unable to complete the work in accordance with the current contractual milestones;

(b) The technical design and tender documentation for the historic buildings B2, C, D and S required several revisions and supplements that lasted more than half a year. Even if the time period for the revisions and supplements were disregarded and only the first date when the design firm submitted a set of the technical design and tender documentation were considered, the design period lasted at least three months longer than expected;

(c) The time period from the first issuance of the request for proposal to the signature of the construction contract on 15 November 2019 was 296 days instead of 250 days. Most of the construction work itself was scheduled to start six months later to allow the implementation of a pre-construction phase in the contract. The pre-construction phase was implemented in response to concerns from the bidders during the procurement procedure. During that period, the contractor would work

with the strategic heritage plan team to procure the subcontractors, suppliers and/or consultants to enable the scope of the project to be delivered within the contract price (see schedule 16 of the renovation work contract, paras. 1.2 and 1.3). As a result of pre-construction services, a guaranteed maximum price is to be agreed on;

(d) The date for the overall completion of the project in the strategic heritage plan team's schedule was postponed from the end of 2023 to the end of August 2024.

104. The Board holds that a schedule based on over-optimistic assumptions and aimed at unachievable objectives may entail further risks. For example, firms may be deterred from submitting bids if they are not provided with adequate time to become familiar with the project, to prepare their bid and to perform the contract. Tenants that rely on the communicated completion dates may be unprepared in case the needed office space is not available in a timely manner. Therefore, the Board holds it to be important that the project schedule be based on realistic assumptions and oriented towards achievable objectives. If the achievable objectives deviate from those objectives that had to be achieved originally, this should be communicated in a transparent and timely manner.

105. The Board recommends that the strategic heritage plan team continue its efforts to determine and communicate a robust project schedule by avoiding over-optimistic time frames.

106. Management accepts the recommendation and has already started to implement it. Management agrees that a realistic and achievable schedule is essential and believes that the future time frames forecast is challenging but still achievable, given the information currently available. Management acknowledges that, in case of unforeseen existing conditions in the buildings, the float in the schedule may prove insufficient. Management continues to track schedule risk in coordination with the risk management firm and to seek mitigating strategies to minimize delays and recover time wherever possible. The schedule delay has been communicated to the project owner, the Steering Committee and the General Assembly in a transparent and timely manner.

5. Building information modelling

107. Building information modelling is a method which allows a profound use of computer technology in the design, engineering, construction and operation of built facilities. This method also aims to provide a seamless link between the project owner, designers, construction professionals, contractor and end users of a construction project. It is based on the idea of the 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 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 having both a best practice process and multidimensional models.

Implementation strategy

108. In October 2014, the United Nations Office at Geneva signed a contract with the design firm requesting the implementation of the building information modelling method into the strategic heritage plan project. That request became part of the contract with the construction firm signed in September 2017.

109. Given those facts, building information modelling has already been in use for almost five years.

110. The Board noted that the strategic heritage plan team handed over the first two sections of the new permanent building H construction project in 2019. The third

section, the new permanent building H itself, is expected to be handed over in 2020. Hence, the phase of building operation and maintenance has already started.

111. However, the Board found no assessments on: (a) personnel and additional costs needed to maintain the building information model after the handover of the strategic heritage plan project; (b) how the valuable information gathered in the building information model could be linked with software already in use, particularly with Umoja. The United Nations Headquarters implemented Umoja Extensions 1 and 2 to cover a broad range of functions, such as real estate, conference and event management.

112. Moreover, the Board noted that the United Nations Office at Geneva had not yet defined which benefits could be achieved by applying building information modelling beyond the construction phase of the strategic heritage plan project, for example how to use and maintain the building information model for operational and maintenance issues.

113. The Board holds that a strategy on how to apply the building information modelling method, especially for the long post-construction phase of maintenance, is important. Such a strategy would support an efficient and target-oriented implementation of the building information modelling method. This would enable all project stakeholders, in particular the United Nations Office at Geneva, to better understand and use this method as well as to take advantage of an as-built model.¹ An example of a strategic target is the use of the building information model for improved operational readiness and maintenance performance. The Board also holds that the Office could clarify how the information from the building information model could be linked with Umoja to avoid redundancy.

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.

115. Management accepts the recommendation. Management sees the handover documents and process as being the vehicle to transfer the building information model and strategy into the ongoing operations of the United Nations Office at Geneva. During the handover, the Facilities Management Section, in particular, will continue to refine its incorporation of the building information model into ongoing operational procedures. Owing to the expected complexity of the building information model, the Section would need to expand its professional capacity in this regard and restructure in order to enhance the related resources within its workforce. The Section may also have to explore the possibility of establishing a service contract. Accordingly, management considers that many of the elements that would go into such a strategy have already been developed and will be written up into a transversal building information modelling assessment.

Contract requirements

116. In March 2014, the United Nations Office at Geneva requested the programme management services firm to provide a building information modelling expert, but without supplying further specifications. According to the contract amendment in 2015, “design reviews within the building information model as appropriate” were part of the job profile. In January 2016, an administrative programmer joined the programme management services firm. According to the monthly contract reports of the programme management services firm, the administrative programmer would

¹ An as-built model represents the digital model of a building that documents the actual condition of the building “as it was actually built”.

review the building information model in March and April 2016. In June 2018, a further contract amendment specified the tasks of those of a senior architect (building information modelling).

117. The Board assessed whether the programme management services firm had performed the tasks contracted with regard to the building information modelling.

118. The Board noted that the 2014 and 2015 contract amendments did not clearly define which tasks the building information modelling expert should perform. It was not until 2016 that the new administrative programmer with building information modelling knowledge started to perform tasks related to building information modelling, which in turn were not contractually attributed to the job requirements of the administrative programmer. Furthermore, the Board noted that the United Nations Office at Geneva had not specified the tasks of a building information modelling manager until 2018.

119. The Board holds that the programme management services firm did not review the building information model as contracted in 2015, since they did not have a building information modelling expert on board. As a consequence, the strategic heritage plan team could not properly review the quality of the building information models created by the design firm until 2018, when the senior architect specialized in building information modelling took on the tasks.

120. Management stated that, prior to 2018, at the feasibility and concept design stage, the review of the building information modelling was a relatively small task and the lead in reviewing the building information model was therefore taken by a member of the strategic heritage plan team (specifically the architect (P-4)), supported by the operational expert architect of the Facilities Management Section. The administrator was recruited in 2016 to perform tasks related to the administration of the project management application, rather than to perform building information modelling. In 2018, turnover of staff, combined with the expansion in the workload of the architects (since both construction and technical design of the renovation were ongoing simultaneously) and the increased level of detail of the building information modelling, led to the need to recruit an expert consultant to take over this work. In this context, having gained her master's degree in building information modelling in 2017, the administrator then took on her new role as senior architect.

121. The Board recommends that the United Nations Office at Geneva continue to incorporate lessons learned from past experience into any upcoming recruitment process of experts for the long-term use of building information modelling to facilitate selection processes.

122. Management accepts the recommendation to incorporate lessons learned from past experience into the planning for future activities, including recruitment of technical experts.

Model approval

123. Pursuant to the contract, the design firm is responsible, inter alia, for developing building information models, which are transferred to the construction firm as the basis for further construction and future operating and maintenance.

124. As a contractual obligation, the design firm “shall develop a comprehensive set of documents regarding the feasibility study of the project as a whole”, followed by three successive design stages: (a) concept design; (b) detail design; and (c) technical design. During all design stages, the model shall be used as a design information exchange platform for all design contributors and as a basis for simulations regarding energy efficiency, space utilization and accessibility as well as cost management. The level of detail of the building information models defines how the geometry of the

building model can achieve different levels of refinement. Furthermore, the single design stages should not be deemed completed until the United Nations Office at Geneva has issued its notice in writing that the design stages are 100 per cent approved.

125. The Board noted that the strategic heritage plan team could provide information models only for the technical design of the new permanent building H but no digital models for the concept design and detail design. Furthermore, the strategic heritage plan did not document whether the models had been approved at the end of the concept design and detail design stage. In addition, the contract with the design firm did not specify the level of detail that the building information models should have reached at the end of each design stage.

126. The Board holds that it is important to follow up on the progress and quality of the building information models at the end of each design stage to avoid design errors and to continuously track the progress of the building information models.

127. The Board recommends that the strategic heritage plan team document the design progress and quality of the digital models at the end of each design stage by approving the respective digital building models for the rest of the strategic heritage plan project.

128. Management accepts the recommendation but observes that the concept and detailed design phases have been finished on all buildings except building E. The instruction given to the design team to proceed with technical design was the indication that the strategic heritage team was sufficiently satisfied with the building information models to move forward. Furthermore, for the historic buildings, a formal meeting was held, and detailed design and associated cost tracker values were signed off. A similar meeting and sign-off will be held for the detailed design of building E.

Model responsibility

129. The design firm developed a building information modelling management plan, which defines the appropriate uses of building information modelling through the construction phase. Some conditions under which the construction firm has to use the building information models are the following:

(a) The building information models are not part of the contract documents for the new permanent building H and the renovation of the Palais des Nations;

(b) The design firm takes no responsibility for the accuracy or completeness of developed building information models or the data and/or information contained therein;

(c) The design firm takes no responsibility for errors and/or omissions contained in the developed building information models;

(d) The contractor is solely responsible for verifying the accuracy of all results created with the use of the building information models provided by the design firm.

130. The strategic heritage plan team reviewed the building information management plan, which became an integral part of the contract with the construction firm.

131. The Board noted that the strategic heritage plan team agreed that the design firm transferred not only the building information models but also the primary responsibility for their quality to the construction firm.

132. The Board holds that the assignment of responsibilities for the building information models should always be linked with their provider.

133. The Board recommends that the strategic heritage plan team confirm the responsibility for the quality of the building information models with their respective providers at all design and construction stages, at least for the renovation of building E.

134. Management accepts the recommendation and confirms that, for building E, the technical design will be performed by the main contractor and not by the design firm. Accordingly, the main contractor will take over responsibility for the models once they begin the technical design.

Model quality

135. A building information model contains relevant information for the planning, construction and operation of a building. The building information model also includes three-dimensional single models, such as an architectural model, a mechanical model, an electrical model or a structural model.

136. The design firm has to model and deliver accurate model elements in terms of size, shape, location and orientation with appropriate level of detail. In addition, the construction work and future maintenance of the constructed building rely on accurate developed building information models. That means that the single models have the same project basis point,² contain only their own technical components and necessary information, are properly updated and include all appropriate dimensions needed for the construction.

137. The design firm handed over the building information models of the new permanent building H to the strategic heritage plan team. These models were the basis for the procurement process and construction works of the new permanent building H for the construction firm.

138. The Board noted that the building information models designed by the design firm were partially incorrect at the concept and detail design phase. For instance:

- (a) Three transformers were modelled as gas generators;
- (b) Electrical elements are shown in the building information structural model;
- (c) The building information models have different project basis points;
- (d) The type information or technical properties in the building information models are in different languages.

139. Furthermore, the design firm handed over one building information model for mechanical, electrical and plumbing to the construction firm. The Board holds that one mechanical, electrical and plumbing model is very complex and difficult to check. The dense information can have an impact on model size and, subsequently, model health due to the large data volumes.

140. The Board acknowledges that the strategic heritage plan team has been working continuously with the design firm, gradually improving the quality of the building information models. The strategic heritage plan team identified these errors and asked the design firm to correct them.

141. The Board holds that any remaining inaccuracies in the design models transferred to the construction firm may endanger the quality of the as-built model to be handed over at the end of the construction phase. Furthermore, a poor quality of the as-built model has a negative effect on its utilization for operational and maintenance purposes. However, the strategic heritage plan team has the opportunity

² The project basis point defines the origin of the project coordinate system.

to review and comment on the models updated by the main contractor on a regular basis, which is a means of addressing these issues as construction progresses.

142. The Board recommends that the strategic heritage plan team continue its efforts to ensure a high quality of the building information models for the entire strategic heritage plan project.

143. Management accepts the recommendation and confirms that suitable contract management measures will continue to be applied to ensure that the contract deliverables are fulfilled.

6. Energy savings

144. In his 2011 report on the strategic heritage plan, the Secretary-General underlined the importance of updating the building exterior and electromechanical systems to reduce the cost of energy consumption. The actions of the United Nations Office at Geneva, including the implementation of the strategic heritage plan, were expected to result in a reduction in the energy consumption at the Palais des Nations (buildings A, B, C, D, E and S) of approximately 25 per cent (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.

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

146. In its 2018 report (A/73/157), the Board recommended that management consider the beginning of the implementation of the strategic heritage plan as the baseline for the reduction of energy consumption. Management should therefore consider the energy savings already achieved through other energy-saving measures to be outside the scope of the strategic heritage plan.

Energy consumption

147. In January 2020, the strategic heritage plan team provided the Board with memorandums related to energy consumption to inform it of the current status of the objective to lower the energy use at the Palais des Nations by 25 per cent using 2010 as a baseline. One of the memorandums was dated November 2018 and another, October 2017.

148. The Board noted that the strategic heritage plan project team, inter alia:

(a) Adjusted the baseline energy consumption by considering only the main buildings of the Palais des Nations (and thus excluding Motta and Wilson);

(b) Determined 2015 as the baseline energy consumption year and consequently adjusted the energy savings target;

(c) Updated the calculations for the new permanent building H related to the expected energy consumption.

149. The Board welcomes the approach to calculating the energy savings by including only the main buildings of the Palais des Nations, as well as the decision to take 2015 as the baseline for energy savings. These are important steps taken so far.

However, the Board holds that the decrease in energy use due to the Swiss donation is still not consistent in every aspect needed for a sound calculation.

150. The Board reviewed the new calculations and would like to point out a few aspects of the strategic heritage plan team's approach to calculating the energy savings.

151. First, by reviewing the calculation for the energy-saving measures that have already been implemented in the Palais des Nations, the Board noted that the calculated results – although all based on energy bills and adjusted on weather variation – differed between the memorandum of 2017 and the revised calculations provided in the memorandum of 2018.

152. Management agreed and stated that the main difference in the historic calculations between October 2017 and November 2018 resulted from narrowing the perimeter of the calculation to the Palais des Nations in line with the Board's previous recommendations, as mentioned in paragraph 148.

153. Second, the Board noted differences in the forecasts of future energy use between the calculations of October 2017 and the revised calculations of November 2018. In both memorandums, in order to calculate the (expected) energy savings of the Palais des Nations, the strategic heritage plan team calculated the current energy use (consumption) of building E (including floors 4 to 10, which will be demolished in the course of the renovation) against the expected energy use (consumption) of the new permanent building H. According to the revised calculations provided by the strategic heritage plan team in 2018, the operational costs for the new permanent building H would be 14 per cent lower than those calculated with the same data in October 2017. The Board summarized the possible results in the table below.

Data on differences in energy use

(Kilowatt-hours)

	<i>According to the memorandum on energy consumption, new permanent building H and building E tower</i>	
	<i>November 2018</i>	<i>October 2017</i>
Energy use for the operation of the E tower	8 886 602	8 886 602
Energy use for the operation of the new permanent building H	3 389 395	3 934 073 (+14% versus 2018)
Decrease in energy use, E tower versus new permanent building H	5 497 207	4 952 528

Source: Email of 20 January 2020.

154. Management stated that the difference between the values for 2017 and 2018 was due to the change in the layout of the new permanent building H to an open-plan layout supporting flexible workplace strategies. This was a major change in the project and is expected to result in a reduction of energy usage as forecast according to host country (SIA) standards.

155. The Board emphasizes that the reduction of energy consumption is one of the key objectives of the strategic heritage plan project. Therefore, it is crucial to have reliable, transparent and comprehensible data on energy-saving measures that have already been implemented, and calculations on the expected energy use. Otherwise, it will not be possible to measure the energy savings achieved through the implementation of the strategic heritage plan.

156. The Board notes the progress in refining the energy efficiency calculations to date and the fact that the change to layouts in the new permanent building H has resulted in revisions to the forecasts for the rest of the project.

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.

158. Management accepts the recommendation and will continue to refine the detailed calculation of actual and forecast energy savings.

7. Flexible workplace strategies

159. The General Assembly, in its resolution [69/274 A](#), 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. In its resolution [70/248 A](#), the Assembly also requested the Secretary-General to continue his efforts 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 this regard in the context of the next progress report. The report of the Secretary-General ([A/68/372](#)) presented 2,800 current workspaces and 3,507 final workspaces projected. The fourth annual progress report on the strategic heritage plan ([A/72/521](#)) indicates that there are opportunities to increase the capacity of the facility beyond the 700 additional workspaces already included in the strategic heritage plan project baseline.

160. The Board noted that the terms used in the different annual progress reports differed when presenting the capacity of the buildings.

161. For example, the baseline report ([A/70/394](#) and [A/70/394/Corr.1](#)) stipulates a total projected number of workspaces of 3,500. However, the fourth annual progress report states that 3,500 staff members can be accommodated at the Palais des Nations.

162. Moreover, these terms were also used differently in one document, such as the fourth annual progress report ([A/72/521](#)). On the one hand, the report states that “the original objective of the strategic heritage plan in terms of space efficiency includes a 25 per cent increase in occupancy, increasing the number of staff accommodated within the Palais des Nations, from 2,800 to 3,500” (para. 18). On the other hand, the report states that “there are opportunities to increase the capacity of the facility beyond the 700 additional workplaces already included in the strategic heritage plan project baseline” (para. 21).

163. Management stated that, in the initial phase of the project, there was no difference in the approved baseline between the actual and forecast number of workspaces on the one hand and the actual and forecast number of occupants on the other hand.

164. The Board understands these developments. However, the Board holds that using different terminology draws attention to different mindsets. Care is especially needed when reporting on the capacity of the buildings of the strategic heritage plan project. Primarily, this includes the use of consistent terminology differentiating between workspaces and occupants while defining the two terms.

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.

166. Management accepts the recommendation.

167. Since his fourth annual progress report (A/72/521), the Secretary-General has not informed the General Assembly about the number of workspaces in his annual progress reports but only in the supplementary information to the Fifth Committee and the Advisory Committee on Administrative and Budgetary Questions.

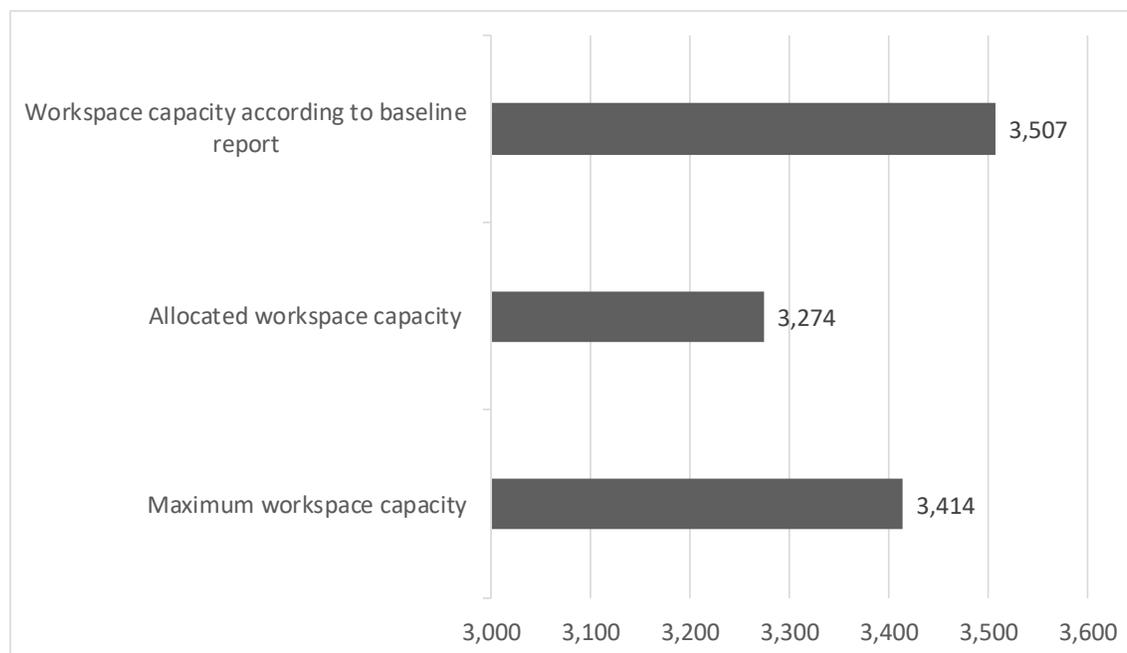
168. In March 2020, the strategic heritage plan team provided the Board with figures on the latest workspace allocation and future maximum capacity of all buildings on the campus of the Palais des Nations. Since building E is still under design, the figures for that building were indicative.

169. The submitted figures showed 3,274 workspaces allocated to buildings on the campus of the Palais des Nations. The maximum capacity of the buildings would be 3,414 workspaces at the end of the strategic heritage plan project. The workspaces counted together the desks as provided in enclosed offices, at usual workstations and touchdowns.

170. The Board noted that these figures indicated 233³ fewer workspaces at the end of the strategic heritage plan than the originally projected workspaces of 3,507 in the baseline report (A/70/394 and A/70/394/Corr.1). Even with the use of the space at maximum capacity, the number of projected workspaces would still be 93⁴ less than originally indicated (see figure IV).

Figure IV

Comparison of the number of projected workspaces at the end of the strategic heritage plan



Source: Board of Auditors.

171. The Board acknowledges that the numbers presented might change, particularly after completion of the design of building E. Nevertheless, the Board holds that it is important that the projected number of workspaces at the end of the strategic heritage plan be regularly presented in a transparent manner, preferably in the annual progress reports of the Secretary-General on the strategic heritage plan. Accordingly, the Board underlines the need for transparency to assess whether and how the strategic heritage

³ 3,507 - 3,274 = 233 workspaces.

⁴ 3,507 - 3,414 = 93 workspaces.

plan project will reach the originally targeted figures as specified in the reports of the Secretary-General.

172. Management stated that flexible workplace strategies properly applied resulted in a reduced area for desks offset by an increase in collaboration spaces, support nodes, meeting rooms and so on. With flexible workplace strategies, the strategic heritage plan team intends to reach 3,616 occupants without allowing for any desk-sharing ratio at the Palais des Nations.

173. The Board holds that the flexible workplace strategy allows an increased use of workspaces where a shared desk policy is applied. This, in turn, results in a higher number of occupants using the workspaces than the actual number of workspaces provided. On that basis, the Board concludes that management should differentiate between the number of workspaces and the number of occupants, following the requests of the General Assembly in its resolutions [69/274 A](#) and [70/248 A](#).

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.

175. Management accepts the recommendation.

8. Number of fire exits in the new permanent building H

176. Pursuant to Swiss fire standards, the fire and safety strategy for the new permanent building H requires the following numbers of exits:

- (a) Up to a maximum of 200 persons: three exits of 0.9 m each or two exits of 0.9 m and 1.2 m;
- (b) More than 200 persons: several exits of at least 1.2 m each; and
- (c) Emergency exits of 0.9 m are allowed in administrative buildings and industry, regardless of the number of occupants.

Number of fire exits on level 6

177. At the end of 2016, the total capacity for level 6 was 174 seats, including enclosed offices, workstations and touchdowns. The latest calculation from July 2018 showed that the number of seats for level 6 had increased to 190, including enclosed offices, workstations and touchdowns. According to Swiss fire standards, at least three qualified fire exits are required for more than 200 persons.

178. The Board noted that the 38 seats in the six enclosed meeting rooms and more than 60 seats in the lounge areas could be occupied simultaneously, in addition to the 190 seats in enclosed offices, workstations and touchdowns.

179. Furthermore, the Board noted that the design of level 6 showed no evacuation route leading directly to the outside of the building. The only fire exits are two staircases on that level.

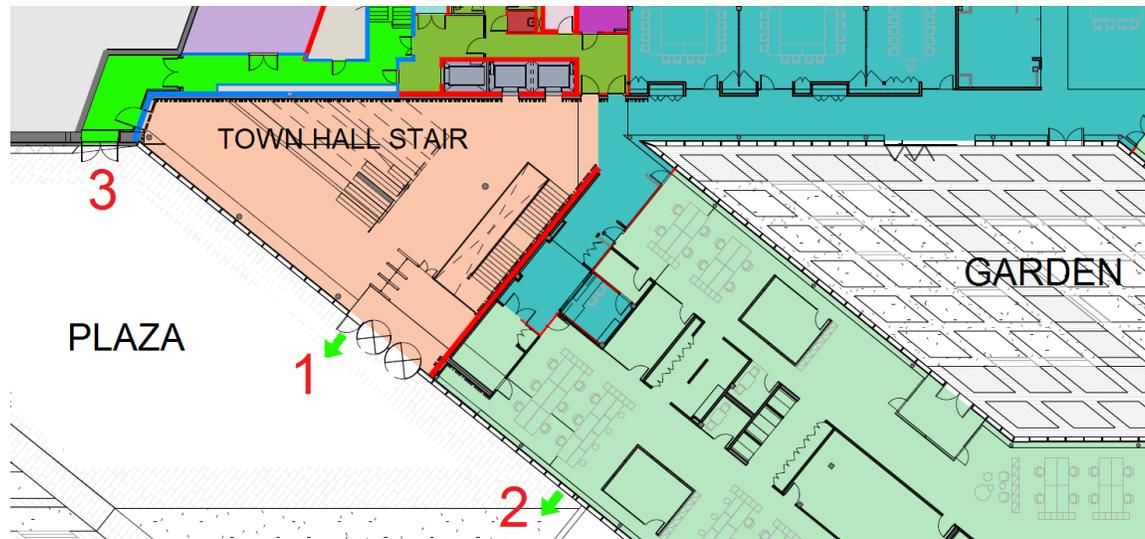
180. The Board holds that the total number of persons on level 6 might easily exceed the maximum of 200 persons. Consequently, this would necessitate a third fire exit on level 6.

Number of fire exits for the town hall on level 2

181. The main entrance and the town hall lobby are located on level 2. The town hall has one exit leading outside marked with the number 1 (see figure V). Exit number 3 is not a designated fire escape route. Furthermore, the new permanent building H does

not provide for an escape through windows, since the curtain wall façade cannot be opened in case of an emergency.

Figure V
Fire exits for the town hall lobby



Source: Extract from security plan, level 2, 18 January 2019.

182. The strategic heritage plan team stated that: (a) the Swiss fire authorities demanded that no more than 200 people use the town hall lobby; and (b) the town hall stairs leading to the level above presented the second fire exit out of the town hall lobby.

183. The Board assessed whether the number of fire escape routes was appropriate as designed in the security plans as at 18 January 2019. In accordance with the Swiss fire standards for administrative buildings, two fire exits are required to evacuate up to a maximum of 200 persons in case of an emergency.

184. The Board noted that the security plan for level 2 showed only one fire exit for the town hall lobby. Furthermore, the Board questions whether a second fire escape route leading upstairs would in fact be used in case of an emergency as stated by the strategic heritage plan team.

185. The Board holds that a second fire exit through exit number 3 would present a much more comprehensible evacuation route than upstairs through the town hall stairs.

186. Management stated that the Swiss fire authorities had already reviewed the fire safety strategy and issued the building permit indicating their approval. Furthermore, an independent certified fire safety professional, approved by the Swiss authorities, was engaged to ensure that the on-site implementation complies with the permit.

187. The Board holds that, especially with regard to the implementation of the flexible workplace strategies, the Swiss fire authorities should be informed about the targeted maximum occupancy per level to confirm compliance with the Swiss fire standards. This is of great importance to ensuring that the United Nations Office at Geneva safely operates the new permanent building H.

188. The Board recommends that the strategic heritage plan team assess whether the number of fire exits, particularly on level 6 and for the town hall

stairs, remains compliant with the number of allowed persons during the operational phase of the building.

189. Management accepts the recommendation. Management intends to put in place operating guidelines to ensure that maximum occupancy limits are respected.

9. Preparation of interfaces and services prior to renovation work

190. The Facilities Management Section is one part of the Central Support Services of the United Nations Office at Geneva. The Section is responsible for the safe and reliable operation, maintenance, modification, improvement, repairs and replacements of the Palais des Nations and associated technical facilities, machinery, equipment and other furnishings installed.

191. After the completion of the new permanent building H, the renovation works of the historic buildings will start taking place in individual sections. One part is the dismantling of technical building systems, such as heating, sanitary, electrical, emergency power and lighting installations, which are all interconnected. For the historic buildings, no completed technical building systems and as-built drawings are available.

192. The renovation contract indicates the activities and responsibilities on business continuity for the contractor during the renovation works. The contract stipulates, inter alia, that the contractor is responsible for business continuity in case of any technical failure. This should also apply to sections where the dismantling has not yet started and thus is still in operation and under the responsibility of the Facilities Management Section of the United Nations Office at Geneva. The renovation contract does not contain detailed information on the point in time at which the contractor has to respond and/or do repairs.

193. The Board holds that the business continuity strategy in case of a technical failure in sections which are still in operation needs to be clarified. The Board sees a risk of interruptions during business hours. Moreover, the strategic heritage plan team should avoid any potential duplication of responsibilities between the team, the contractor and the Facilities Management Section of the United Nations Office at Geneva and ensure the rectification of technical failure in operating sections as quickly as possible.

194. The Board recommends that the strategic heritage plan team establish a task force for the case of technical failure in operating sections. The task force should consist of three to six responsible technicians from the contractor for the renovation works as well as from the Facilities Management Section, the Information and Communications Technology Service and the Security and Safety Service, and the communication manager of the Division of Administration.

195. Management accepts the recommendation and has already set up a regular operations coordination meeting to ensure coordination between the relevant stakeholders. The respective roles and responsibilities have also been clarified. To specifically manage the business continuity issue, a workflow has been developed by a working group created in November 2019.

196. The Board further recommends that the strategic heritage plan team arrange a written agreement between the contractor for the renovation works and the Facilities Management Section. The agreement should include key data such as names of the technicians responsible, emergency/service telephone numbers, response times and so on.

197. Management accepts the recommendation. The workflow developed recently will become an additional document to the existing schedule on business continuity included in the renovation contract. The document will describe the process (helpdesk numbers, response time) over the course of the project and include the names of the technicians.

10. Sustainability

Background

198. In 2015, the General Assembly adopted the 2030 Agenda for Sustainable Development, a transformative plan of action based on 17 Sustainable Development Goals. The Goals represent a universal agenda which serves as the overall framework to guide global and national development action until 2030. All countries and stakeholders, acting in collaborative partnership, are to implement this plan. Construction and building activities have a direct or indirect impact on the environment and, accordingly, on nine of the Goals.

199. During their construction, occupancy, renovation, repurposing and demolition, buildings use energy, water and raw materials, generate waste and emit potentially harmful atmospheric emissions. This fact has prompted the creation of green building standards, certifications and rating systems such as the Leadership in Energy and Environmental Design (LEED), aimed at mitigating the life cycle impacts of buildings on the natural environment through sustainable design.

200. The LEED rating system is based on energy and environmental principles which strike a balance between known established practices and emerging concepts. Overall, the target is to reduce energy consumption and greenhouse gas emissions associated with building systems, transportation, the embodied energy of water, the embodied energy of materials and, where applicable, solid waste. Credits can be earned in five environmental and two additional categories.

Embodied carbon emission of the new permanent building H

201. In March 2016, the design firm of the strategic heritage plan project aimed to obtain LEED gold certification based on LEED v4 for the new permanent building H. LEED v4, which went into effect in December 2013, includes a credit for Building Life Cycle Impact Reduction with a life cycle assessment as one of the options.

202. A life cycle assessment is a tool to calculate the environmental impacts due to the manufacturing and transport of construction materials, the process of construction, activities related to building occupancy and maintenance, demolition and final waste disposal. Such an assessment supports design decisions made at the beginning.

203. In February 2017, the United Nations Office at Geneva changed its sustainability requirements from LEED v4 to LEED v3. At that time, this decision was made based on the fact that:

(a) The material credits for LEED v4 were not readily available in the Swiss market (environmental and health product declaration);

(b) The indoor environmental quality credits were also not available in the Swiss market (new chamber test requirements);

(c) There was also a full document outlining the international alternate compliance paths for LEED v3, including European mechanical, electrical and plumbing standards. This documentation, which did not exist at the time for LEED v4, was key to ensuring compliance with LEED criteria.

204. LEED v3 has no credit for Building Life Cycle Impact Reduction. Accordingly, the design firm did not perform a life cycle assessment to identify environmental hotspots and greener alternatives.

205. In that regard, the Board would like to draw attention to the fact that building construction and operations accounted for 36 per cent of final global energy use and 39 per cent of energy-related carbon dioxide emissions in 2018.⁵ This is based on the fact that embodied carbon emissions are produced during the manufacture, transportation, installation, maintenance and disposal of products and materials that go into buildings. Most of these emissions are a result of cement and steel manufacturing, which have high process emissions and are used in large quantities. Aluminium, glass and insulation materials are secondary contributors. Accordingly, carbon emissions from buildings are a key component in the global fight against climate change.

206. There are many ways, from simple design to specifications, to reduce embodied carbon emissions. A careful analysis should be conducted to ensure that carbon emissions are reduced overall. The first step is to identify carbon “hotspots” – materials or systems that contribute the most to a building’s embodied emissions.

207. The Board holds that the strategic heritage plan team applied good approaches to reduce the volume of concrete by agreeing to the value engineering proposal from the contractor during the construction phase to replace all precast concrete beams weighing 284,000 tons with timber beams.

208. However, some more elements could have been considered, such as planning with lighter wooden beams from scratch, which would have also reduced the concrete foundation and column loads. Furthermore, the curtain wall façade consists of 1,650 façade elements based on aluminium, which is responsible for approximately 1 per cent of global carbon dioxide emissions. Therefore, greener alternatives could have been identified for the façade of the new permanent building H.

209. In that regard, the Board would like to highlight that it is vital to discuss low-carbon options at key project stages, starting with the design, procurement and construction process until the practical completion. Furthermore, life cycle principles should also be integrated into the design, procurement and construction processes. Embodied carbon is an important impact category in life cycle assessment. Therefore, performing life cycle assessments supports decisions on embodied carbon. This enables the parties involved to carry out positive changes.

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.

211. Management accepts the recommendation, which has already been implemented through measures to lower the carbon emissions for the overall strategic heritage plan project within the opportunities provided by its scope, budget and schedule. Management intends to continue to do so for future buildings’ designs, subject to the availability of sufficient upfront budgetary and human resources.

Renewable energy production

212. In his sixth annual progress report on the strategic heritage plan ([A/74/452](#)), the Secretary-General stated that the renovation of the Palais des Nations would increase

⁵ International Energy Agency, *2019 Global Status Report for Buildings and Construction* (United Nations Environment Programme, 2019).

electricity generation from solar panels. Furthermore, new solar panels on the roof of the new permanent building H would produce additional electricity.

213. In 2013, a donation enabled the installation of solar panels on the roofs of the Palais des Nations.

214. The Board noted that the strategic heritage plan team would not install additional solar panels on the roofs of the Palais des Nations. Furthermore, all the solar panels on the roofs of the Palais des Nations campus, including the new permanent building H, would produce less than 2 per cent of the total energy consumption of the campus per year.

215. The Board holds that the energy efficiency strategy of the strategic heritage plan could be more effective. In that context, resolution [73/236](#), in which the General Assembly called upon the Secretary-General to promote renewable energy in all United Nations facilities, should be taken into account.

216. The Board holds that life cycle cost and life cycle assessment analyses conducted during the pre-planning phase of construction projects could assess how the energy efficiency strategy will have an impact on the whole life of the building. Often, insufficient efforts or investments to make the building energy-efficient are put into the design of a building; hence, great inefficiencies are regularly incurred in the operational phase of a building.

217. By implementing life cycle assessments and life cycle cost analyses in an early design phase, the United Nations Office at Geneva can identify justified economic and environmental design decisions to develop more sustainable buildings.

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.

219. Management accepts the recommendation, subject to the availability of sufficient upfront budgetary and human resources.

LEED light pollution

220. The LEED Sustainable Sites credit section addresses environmental concerns related to building landscape, hardscape and exterior building issues. One credit of the LEED Sustainable Sites can be obtained for reductions in the amount of light trespass and skyglow. Skyglow is unwanted light emitted into the night sky from unshielded lamps. Reducing light pollution conserves and protects the natural and cultural heritage of night skies.

221. Moreover, credits for exterior lighting can be earned if areas are lit only as required for safety and comfort. In addition, lighting power densities must not exceed the standard for the classified zone starting with dark zone one (such as parks, forest land and rural areas) and ending with high zone four (high-activity commercial districts in major metropolitan areas).

222. The design firm classified the new permanent building H within the LEED boundary in the Ariana Park in zone two, where a maximum of 2 per cent of uplighting is permitted. However, the design firm stated that it was not possible to achieve the 2 per cent maximum requirement for uplighting owing to the illumination of an outside wall and the uplights to trees. Therefore, no credit could be earned in this category. Nevertheless, lighting power densities would be reduced by using light-emitting diode lighting in the new permanent building H and in the external area.

223. The Board appreciated the use of light-emitting diode lights as a positive development in terms of energy savings. However, the design firm planned to install

555 luminaires in the external landscape, the external stairs and rooftops of the new permanent building H. Some 180 of these luminaires are uplights and would produce more than 40 per cent of uplighting instead of the 2 per cent envisaged in zone two. This might undermine the aforementioned savings through more and brighter lamps.

224. In the Board's opinion, the intelligent use of artificial lighting that minimizes skyglow and avoids obtrusive visual impact on both humans and wildlife should be promoted. Therefore, installing luminaires should be done in a way that protects the environment to the greatest extent possible, thereby taking health and safety requirements into consideration.

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.

226. Management accepts the recommendation, which has already been implemented. The external lighting as designed is mandatory for health and safety in order to secure the footpath to the main entrance of the building. The area where the new permanent building H is located is currently in a dark zone. The strategic heritage plan team intends to minimize obtrusive light and energy use by using light-emitting diode technology in order to answer to health and safety constraints. In addition, the external lighting will not be used outside working hours as far as possible.

11. Potential alternative sources of project financing

227. In its resolution [69/262](#), the General Assembly requested the Secretary-General to continue to explore all possible alternative funding mechanisms in order to reduce the overall assessment on Member States and to report on concrete steps taken in this regard. The Secretary-General referred to one such funding mechanism in paragraph 98 of his 2014 report on the strategic heritage plan ([A/69/417](#) and [A/69/417/Corr.1](#)): the sale or lease of certain parcels of land owned by the United Nations in Geneva.

Presentation of the valorization strategy

228. The Board recommended in its report for 2018 ([A/73/157](#)) that management develop a detailed valorization strategy and consider establishing an experienced internal team responsible for the valorization.

229. The United Nations Office at Geneva concurred with the recommendations and highlighted that the lack of dedicated resources in that regard would limit progress on the initiative. The Office stated further that the General Assembly, in its resolution [71/272 A](#), had not approved the provision of requested additional resources. Given the lack of both internal capacity and skills required in this specific area to carry out such a function, consultants for the preliminary steps of works including the development of a comprehensive valorization strategy and strategic plan for implementing the valorization strategy were deployed.

230. Subsequently, the United Nations Office at Geneva put in place two call-off contracts with real estate consultants. A local legal service call-off contract covered the range of legal services that might be required with regard to valorization. The United Nations Office at Geneva coordinated and led the activities of the consultants.

231. The United Nations Office at Geneva reported on valorization as follows:

(a) In the sixth annual progress report on the strategic heritage plan ([A/74/452](#)), the General Assembly was requested to endorse the valorization strategy outlined in the report:

(i) However, although the relevant subsection, on the progress of valorization activities, indicated that a comprehensive valorization strategy had been concluded, which was aimed at maximizing the long-term generation of income, it did not define or describe the valorization strategy as such for a reader who is not familiar with valorization strategies;

(ii) Moreover, the subsection provided further that an estimated overall gross income range of between SwF 80 million and SwF 133 million could be achieved. The subsection did not specify whether the estimated overall gross income would be achieved when paid in lump sums or in annual lease payments;

(b) Complementing the sixth annual progress report on the strategic heritage plan, the supplementary information stated that the achievable estimated total income would range from SwF 81.2 million to SwF 134.1 million if the 90-year lease were paid in a lump sum. If the 90-year lease were paid in annual lease payments, the estimated total income would range from SwF 189.0 million to SwF 396.0 million;

(c) In answering the following relevant questions from the Fifth Committee: “Please elaborate on the resources of expenditure on the preparatory works related to the realization of the valorization. Is it covered within the approved resource of the strategic heritage plan? Why was such a requirement not proposed in previous reports?”, the United Nations Office at Geneva provided detailed information on valorization income potential value ranges, detailed estimated valorization realization costs and a broadly outlined strategic plan in two phases for implementing the valorization strategy including preparatory works to achieve the range of income potential. Furthermore, management provided estimated net surplus proceeds from valorization and a summary of the development of valorization over the past five years.

232. Comparing all of these pieces of information, the requests to the General Assembly in the supplementary information for the Fifth Committee differed in wording from the requests in the sixth annual progress report on the strategic heritage plan. This applies to, for example, authorizing the offset of the preparatory cost against the valorization income versus authorizing the expenditure on the preparatory works necessary to realize the maximum possible long-term revenue stream under income section 2 of the programme budget, or the new request in the supplementary information for the Fifth Committee to decide to take the income as an annual income stream rather than as upfront lump-sum payments in order to maximize the long-term value and revenue to be returned to Member States.

233. The Board holds that the information in the sixth annual progress report on the strategic heritage plan and that in the supplementary information to the Advisory Committee on Administrative and Budgetary Questions and the Fifth Committee about valorization partially differed in scope, detailing and, as to the requests, in wording. The partially different presentation in the reports on valorization may have made it more difficult for the General Assembly to come to a decision on the requests.

234. The General Assembly, in its resolution [74/263 A](#), encouraged the Secretary-General to continue his efforts in maximizing the long-term generation of income through long-term, community-oriented leasing arrangements for United Nations-owned land in Geneva. In this regard, the Assembly requested the Secretary-General to present detailed plans on the valorization strategy and preparatory works, including the scope, duration and resource requirements for the preparatory works, for the consideration of the Assembly as early as practicable.

235. The Board sees the need for management to outline all relevant information on valorization for stakeholders coherently in one document. Such a document would compile the valorization strategy, income potential, information on preparatory

works, resource requirements for the preparatory and realization works, financing and other relevant information. If necessary, it would be updated in the course of time. In this way, the information about valorization would be kept coherent and information to stakeholders would be facilitated.

236. **The Board recommends that the United Nations Office at Geneva summarize all relevant information on valorization, including the supplementary information provided to the Advisory Committee on Administrative and Budgetary Questions and the Fifth Committee (excluding commercially sensitive information), in a structured, concise and coherent document, update it, if necessary, in the course of time and use this document as a basis to confidentially inform the General Assembly and other stakeholders.**

237. Management accepts the recommendation. Management has already initiated action in this regard.

D. Acknowledgements

238. 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) **Kay Scheller**
President of the German Federal Court of Auditors
Chair of the Board of Auditors
(Lead Auditor)

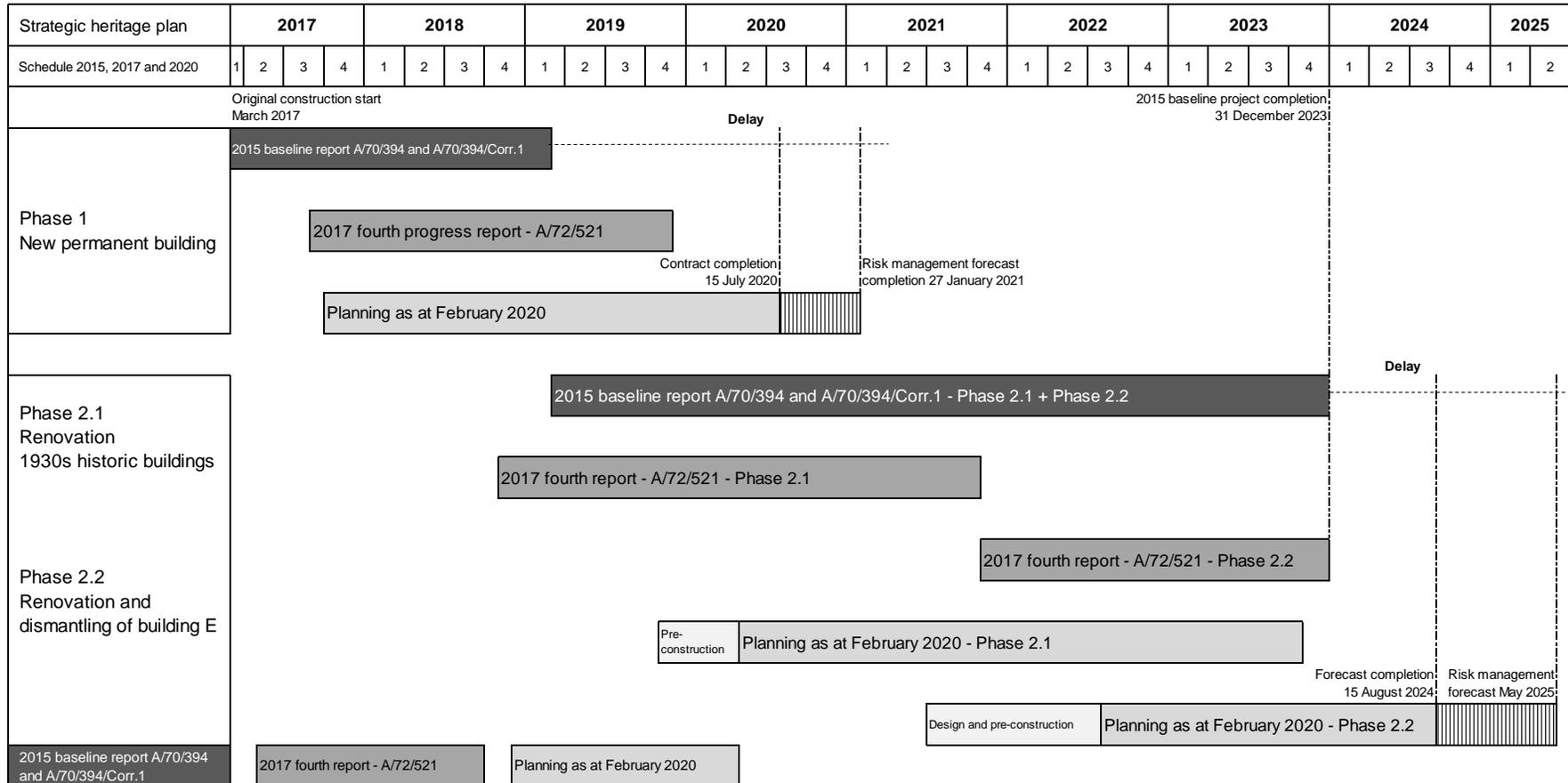
(Signed) **Rajiv Mehrishi**
Comptroller and Auditor General of India

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

21 July 2020

Annex I

Project schedules of September 2015, October 2017 and February 2020



Source: Board analysis of the second and fourth progress reports of the Secretary-General on the strategic heritage plan (A/70/394, A/70/394/Corr.1 and A/72/521) and current data provided by the strategic heritage plan team and the risk management firm.

Annex II

Status of implementation of previous recommendations

No.	Audit report year	Paragraph reference	Recommendations of the Board	Management comments on the audit reports (A/74/5 (Vol. I), A/73/157, A/72/5 (Vol. I) and A/72/5 (Vol. I)/Corr.1), January 2020	Board's assessment	Status after verification			
						Implemented	Under implementation	Overtaken by events	Not implemented
1.	2018 A/74/5 (Vol. I)	514	The Board recommends that the risk management firm send the quarterly report directly to the project owner.	The risk management firm has been sending its quarterly reports directly to the project owner since 27 February 2019 and will continue this practice in the future.	The recommendation is considered to be implemented.	X			
2.	2018 A/74/5 (Vol. I)	519	The Board recommends that the strategic heritage plan team invite stakeholders to attend risk management meetings.	Stakeholders are consulted through the technical focal points of the strategic heritage plan team from the Security and Safety Service, the Information and Communications Technology Service and the Facilities Management Section throughout the project. Managers in these offices have also been invited to risk management meetings.	The recommendation is considered to be implemented.	X			
3.	2018 A/74/5 (Vol. I)	530	The Board recommends that the strategic heritage plan team ensure that the cost plans are updated on a timely basis and are consistent with the figures included in the reports of the Secretary-General and other internal and external financial reports on the project.	Management stated that cost plans are updated on a continuous and timely basis. Furthermore, management has ensured that applicable cost plan figures are consistent with the figures included in the current report of the Secretary-General and other internal and external financial reports on the project.	The recommendation is considered to be implemented.	X			
4.	2018 A/74/5 (Vol. I)	531	The Board recommends that the strategic heritage plan team maintain a clear audit trail of the costs of the project, from the cost plan to the figures that are	Management has prepared a clear audit trail of the costs, from the cost plan to the figures which are included in the current report of the Secretary-General.	The recommendation is considered to be implemented.	X			

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5.	2018 A/74/5 (Vol. I)	532	included in the reports of the Secretary-General. The Board recommends that donations within the strategic heritage plan baseline scope should be excluded from the project costs upon the signing of a memorandum of understanding, as they will reduce the contributions of Member States to the strategic heritage plan.	Management implemented the recommendation accordingly. The voluntary contributions received until this moment, being applicable to the project scope, have been named in paragraph 65 of the progress report (A/74/452).	The recommendation is considered to be implemented.	X			
6.	2018 A/74/5 (Vol. I)	545	The Board recommends that the strategic heritage plan team develop, in close cooperation with the Facilities Management Section, a handover procedure manual. This would ensure that the responsibilities, procedure and expected handover documents are clear for the strategic heritage plan team and for the Facilities Management Section. The goal must be to hand over the sections of the works from the contractor to the strategic heritage plan team and the United Nations Office at Geneva/Facilities Management Section at the same time.	Management has developed a handover procedure manual in close cooperation with the Central Support Services, the Facilities Management Section, the Information and Communications Technology Service and the Security and Safety Service. The handover procedure manual was signed by the strategic heritage plan team and the aforementioned offices in September 2019 and is available on PMWeb.	The recommendation is considered to be implemented.	X			
7.	2018 A/74/5 (Vol. I)	557	The Board recommends that management confirm its decision to install bicycle racks in time for	Management confirms that the Central Support Services will install bicycle racks in time for the opening of the new building	The recommendation is considered to be implemented.	X			

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			the opening of the new building.	as part of the wider sustainability strategy of the Palais des Nations campus.					
8.	2017 A/73/157	67	The Board recommends that management establish a process for the use of general contingency allowances which aligns more closely with the guidelines for the management of construction projects.	The design and programme changes form requires approval of contingency use, if any. Variations on construction contracts that constitute contingency usage are tracked using the monthly report. Additional expenditure committed using contingency funding is disclosed in the annual progress report.	The recommendation is considered to be implemented.	X			
9.	2017 A/73/157	68	The Board also recommends that management ensure reconciliation of occurred risks and the corresponding contingency usage.	Additional language has been added to the two most recent annual progress reports (A/74/452 and A/73/395). Movements in base costs are described in detail in these reports and in the corresponding supplementary reports. Disclosure is given where expenses funded from contingency have been committed. Until a purchase order commitment is made, the contingency is not "used".	The recommendation is considered to be overtaken by events.			X	
10.	2017 A/73/157	69	The Board further recommends that management track the accrued cost against the initial baseline costs.	The supplementary report for the past two years contains a variance analysis between the current cost forecast and the initial baseline forecast.	The recommendation is considered to be implemented.	X			
11.	2017 A/73/157	82	The Board recommends that management underline the importance of a decision to be taken by the General Assembly at its	Paragraph 98 of the fifth annual progress report (A/73/395) states that the Secretary-General recommends option 3, i.e. a one-time upfront appropriation with	The recommendation is considered to be under implementation.		X		

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			seventy-third session regarding the scheme and currency of appropriation and assessment for the strategic heritage plan to secure the financing of the project.	a mix of one-time and multi-year assessments. The General Assembly decided to revert to the establishment of an assessment scheme and currency of appropriation and assessment at its seventy-fourth session and requested the Secretary-General to provide updated detailed information on these issues. The Secretary-General reiterated this recommendation in his current report (A/74/452).	The Secretary-General presented updated charts of the possible options for the project in his current report (A/74/452). The General Assembly deferred the decision and has not decided on an assessment scheme and the currency of appropriation during its seventy-fourth session.				
12.	2017 A/73/157	259	The Board recommends that management consider the beginning of the implementation of the strategic heritage plan as the baseline for the reduction of energy consumption. Management should thereby take into account the energy savings already achieved through other energy saving measures outside of the scope of the strategic heritage plan since the benchmark of 25 per cent has been stipulated, and define a clear, adapted benchmark as the objective for the energy savings envisaged with the implementation of the strategic heritage plan.	Management has prepared calculations of a revised baseline from the beginning of the strategic heritage plan and a corresponding reduction to the target percentage, in order to arrive at the same eventual outcome. The Board's feedback on these calculations is being assessed and incorporated.	The recommendation is considered to be implemented.	X			

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13.	2017 A/73/157	261	Furthermore, the Board recommends that management base the calculation of energy savings on sound and reliable data on the energy consumption at the Palais des Nations before the implementation of the strategic heritage plan started, namely, before the start of the construction work on the new building.	See para. 259 above.	The recommendation is considered to be under implementation. The provided data require further refinement.		X		
14.	2017 A/73/157	262	Furthermore, the Board recommends that management consider solely the energy consumption at the Palais des Nations for the baseline for the reduction of energy consumption.	Management stated that it remained of the view that the baseline should not be solely based on the Palais des Nations but should also include the Palais Wilson and Giuseppe Motta buildings, otherwise it would not be comparing.	The recommendation is considered to be implemented.	X			
15.	2017 A/73/157	271	The Board recommends that the strategic heritage plan project team develop a sound and clear maintenance and operational strategy for the period during which sections of the Palais des Nations will have already been renovated while other connected sections will still be under construction. The experience of the Facilities Management Section should be considered in the development of this strategy.	The strategic heritage plan team and the Facilities Management Section worked together to draft a contractual scope of work included in the request for proposal of the renovation contract. This schedule R-ARC-A-5-23-G-022-03-Chapter 022-Maintenance Services describes the process for the contractor to propose a maintenance contract to the Section for each discipline and section of works. In order to ensure access to the rooms equipped with infrastructure under the Section's supervision, a list of those rooms is attached to	The recommendation is considered to be implemented.	X			

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16.	2017 A/73/157	272	Furthermore, the Board recommends that the strategic heritage project team calculate the expected maintenance and operational costs in close cooperation with the Facilities Management Section as a basis for consideration of funding strategies. Availability of adequate funding for maintenance and operation during and after the implementation of such projects as the strategic heritage plan is crucial for avoiding the need for such programmes of work in the future.	schedule 3, Chapter R-ARC-A-5-23-G-017-10-Sch3Chap017 for Business Continuity, in the request for proposal of the renovation contract. Furthermore, access procedures to those rooms for the Facilities Management Section and contractors are described in the roles and responsibilities with regard to the situation before, during and after the substantial completion of sections of works. The Facilities Management Section has been working on establishing the budget for the operation and maintenance cost related to building H, which is to be handed over to the Section upon completion. In addition, the Section has prepared the budget estimate for the existing buildings for 2020.	The recommendation is considered to be implemented.	X			
17.	2017 A/73/157	282	The Board recommends that management enhance its efforts to mitigate the impact of its buildings on the natural environment through sustainable design	The detailed design has now been completed for all buildings, incorporating sustainability measures to minimize the negative impact on the natural environment. The most	The recommendation is considered to be under implementation. Management stated that it would assess		X		

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			and ensure that the contractor for the new building performs its work with the objective of fulfilling all environmental categories from the LEED green building certification systems, as stipulated in the contract.	significant of these measures are described in section III.E of the current report of the Secretary-General. The LEED performance will be assessed upon completion of the new permanent building H.	the LEED performance upon completion of the new permanent building H.				
18.	2017 A/73/157	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 relocating 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.	The United Nations Office at Geneva, in coordination with the global rental working group, has performed a review of working practices and the market rate and is in the process of finalizing its review analysis and recommendations, with the aim of translating the outcome of the global review into the framework applicable to the Palais des Nations and while consulting Headquarters with regard to the implementation of these guidelines in the context of flexible workspace strategies at Headquarters, which will also be of importance in 2020, when part of the occupants of the Palais will be moving to the newly constructed building H.	The recommendation is considered to be under implementation.		X		
19.	2017 A/73/157	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	The maintenance as well as safety and security requirements will be assessed in the context of the review described above under paragraph 316 and appropriate recovery mechanisms will be defined to ensure safe and full operations at the Palais des Nations.	The recommendation is considered to be under implementation.		X		

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			accordance with their individual needs.						
20.	2017 A/73/157	344	The Board recommends that management develop a detailed valorization strategy for all parcels with valorization potential.	The detailed valorization strategy is described in the current report of the Secretary-General and the corresponding supplementary report.	The recommendation is considered to be implemented.	X			
21.	2017 A/73/157	345	The Board recommends that management consider establishing an experienced internal team responsible for the valorization of United Nations-owned land in Geneva.	It should be noted that, in its supplementary financial information to the annual progress report (A/74/452), management has indicated that the valorization work would need to be adequately resourced from income section 2 of the regular budget to be able to establish an internal team responsible for the valorization of the United Nations-owned land. This would therefore enable the conduct of the preparatory works necessary to realize the revenue stream. It has also provided the estimated valorization realization costs in table S.9. In view of the above, the Secretary-General has requested the General Assembly to endorse the implementation of the valorization strategy outlined in the report (A/74/452, currently before the Assembly), and authorize the expenditure on the preparatory works necessary to realize the revenue stream under income section 2 and note that future progress on valorization of United Nations land in Geneva will be reported	The recommendation is considered to be overtaken by events.			X	

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22.	2016 A/72/5 (Vol. I) and A/72/5 (Vol. I)/Corr.1, chap. II	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.	under income section 2 of the programme budget. Accordingly, management considers that this recommendation can be closed, as the decision rests with Member States. With regard to recommendation (a), the strategic heritage plan project manual has been finalized and has been operationalized and is being implemented by the strategic heritage plan team. Regarding recommendation (b), the strategic heritage plan project manual is being updated to incorporate the revised delegation of authority framework and, following review by the project executive and the project owner, is expected to be approved shortly.	The recommendation is considered to be under implementation. The latest version of the programme manual is a draft from December 2017. It still includes parts that have to be finalized, e.g. for the renovation phase. The project owner has not yet approved the programme manual.		X		
Total			22			14	6	2	0
Percentage			100			64	27	9	0