MOTT MACDONALD

Concept Designs for New Terminal Facilities

Almaty Airport, Kazakhstan

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Contents

Figures

1 Introduction

This document has been produced by Mott MacDonald Ltd, as commissioned by JSC Almaty International Airport.

TAV Airports Holding Co. acquired Almaty Airport in 2021 and is working with TAV Construction Ltd and consultants Mott MacDonald Ltd on plans to expand the airport's terminal facilities.

Almaty Airport is the busiest airport in Kazakhstan and expansion works have been determined as necessary in order to increase the terminal capacity of the airport to meet projected passenger numbers. It has been specified (following optioneering) that the best way for this to occur is by constructing a new passenger terminal which will be for international flights, whilst the existing passenger terminal will serve domestic flights. This therefore forms the basis of the proposed design.

This optioneering identified that the best location for the new international passenger terminal is immediately north of the existing passenger terminal, where the current VIP terminal building is located, and therefore has a direct bearing on the VIP terminal building. The VIP terminal building is a listed heritage asset with the landside elevation partially seen when approaching the airport from Mailin Street. Because of the historic nature of this building, heritage studies have been undertaken to understand the significance of its heritage value and how to minimise potential impacts to the VIP terminal building.

Option development has been undertaken for where the expanded passenger terminal facilities may be located, as presented in the Evaluation of Alternatives report (Mott MacDonald, 2022, document reference: 100107121-004). As part of the option development, consideration was made regarding the impacts on the built heritage at the airport resulting from the different options proposed for the VIP terminal building.

As a result of the optioneering process, two location options have been proposed to be taken forward to stakeholder consultation. Concept designs for them have therefore been prepared as presented in this document. This aligns with the outputs of the optioneering as shown in the Evaluation of Alternatives report. The two location options are being considered at this stage are:

- Option 1.1: Retain the existing VIP terminal building in its present location. Locate the new international terminal adjacent to the VIP terminal building with a split-level entrance; and
- Option 2.2: Develop the new passenger building where the VIP Terminal Building currently is. Relocate the VIP terminal facilities to a new building, aligned to Zakarpatskaya St. and by the southern apron. The designs for the relocated facilities would be based on the current building with many heritage features preserved and moved across from the current building to the new building.

This document provides narrative to describe these designs and provide conceptual rationale for the design decisions made, to give additional context to the drawings. This concept design has been prepared prior to stakeholder consultation therefore changes may be made following this.

These concept designs are not intended to act as detailed designs; instead, detailed design elements would be developed at a later part of the process once a finalised option is selected; the designs presented here have deliberately avoided too much detailed information in order to allow consideration at the concept level before further designs are undertaken.

The next step is that the conceptual designs are taken to stakeholder consultation. Following this, a final design is selected and further developed, with more detailed designs presented for a subsequent stakeholder consultation. After this final stakeholder consultation, designs will be finalised. The following documents will be disclosed as part of the stakeholder consultation process:

- Conceptual Design (this document);
- Heritage Statement;
- Heritage Interpretation Plan;
- Conservation Performance Guidelines;
- Significant Fabric Assessment;
- Evaluation of Alternatives; and
- Non-Technical Summary of heritage impacts.

The above documents have been prepared in English to the standards of project lenders EBRD and IFC. Translations of the Heritage Interpretation Plan and Non-Technical Summary into Russian and Kazakh will be provided. Russian language versions of the Conceptual Design document will also be provided.

The following chapters present the designs of the two options, with Chapter 2 presenting “Option 1.1” and chapter 3 presents “Option 2.2”.

Note that the source for all images shown in this document is “TAV Construction, 2022”.

2 Option 1.1: Integrate VIP Terminal Building into the new passenger terminal

For this option, the new international terminal would be located behind the VIP terminal building and the two buildings would be integrated. The landside entrance would be split-level from a vehicle ramp built in front of the VIP terminal building to enable sufficient passenger flow and vehicle space for drop-off and pick-up.

The airside ramp area would need to be extended westwards to accommodate the terminal area, and this would be to a greater extent than with Option 2.2 as the new terminal would be set further back from the drop-off/pick-up area than Option 2.2 in order to accommodate the VIP terminal building.

2.1 Design Considerations

2.1.1 Terminal layout

The new passenger terminal building will have a floorspace of approximately 48,000m^2 which will be split between two floors for passengers, as well as a mezzanine level. The ground floor, referred to as “floor 1”, will be focussed on arriving passengers, and will include the arrival controls and passport area, baggage reclaim area, customs, duty free, and the arrival hall. This level will also include departure areas for remote gates, baggage handling systems, a VIP (Very Important Person) area, and some retailers / food and beverage outlets.

Figure 2.1 shows an impression of the layout of the new Passenger Terminal Building (PTB) on the first floor, and how this would link to the existing VIP building from a plan perspective. As can be seen, the VIP terminal building would be located between the new PTB and the passenger pick-up location, meaning that passengers would pass through the VIP terminal building to access the vehicle ramp area.

The upper level used by passengers is referred to as “Floor 2”. This comprises the departure area and includes the departures hall, check-in area, departure controls and passport area, duty free, shops, food and beverage areas, boarding gates, and air bridges to aircraft. This is shown on **Figure 2.2**.

As is shown, at Floor 2 level, the VIP terminal building would need to be crossed over in order to access the new PTB from the upper level of the vehicle ramp for dropping-off passengers. Three walkways are proposed which would bridge the VIP terminal building. Further details on these are provided in Section 2.1.2.

Figure 2.1: Plan view of Floor 1 of Option 1.1

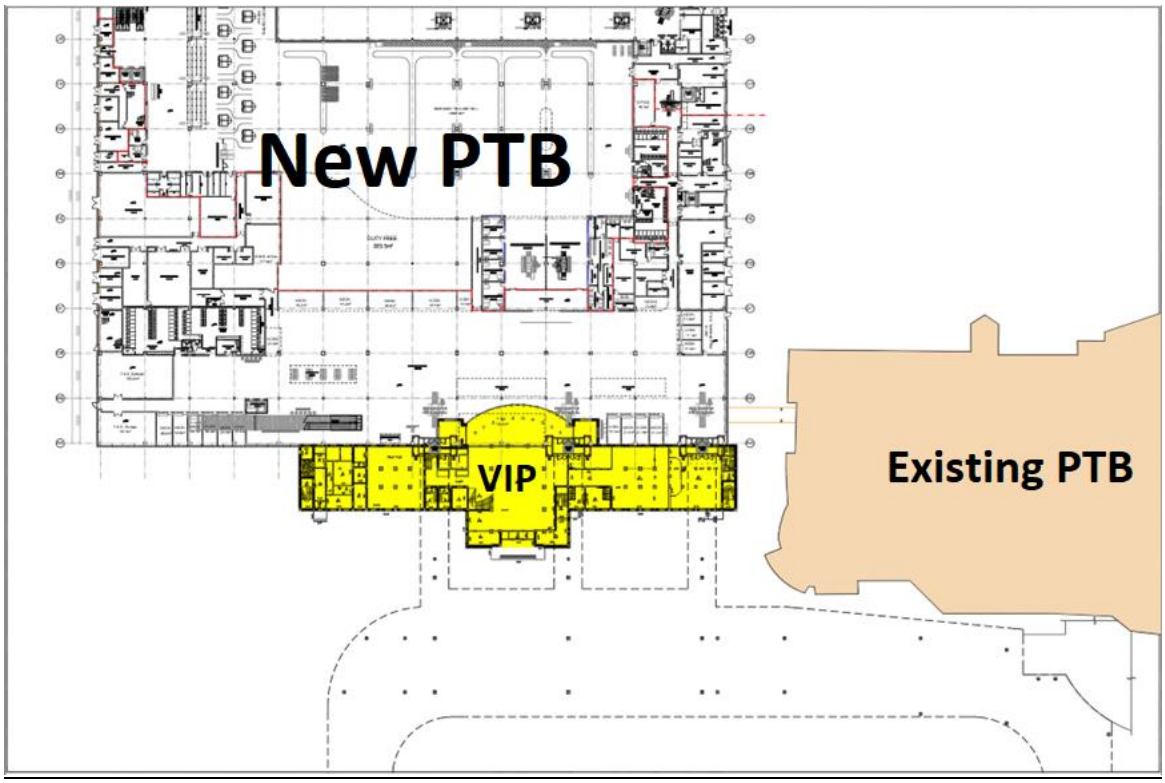
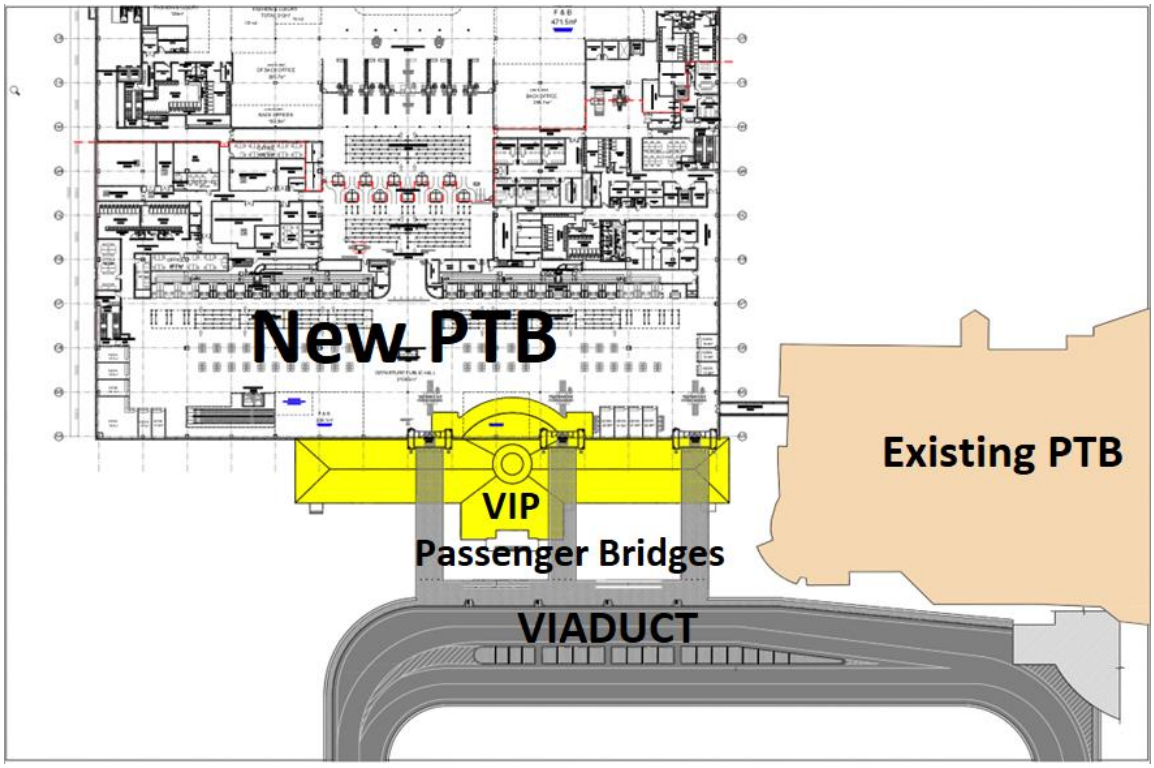


Figure 2.2: Plan view of Floor 2 of Option 1.1



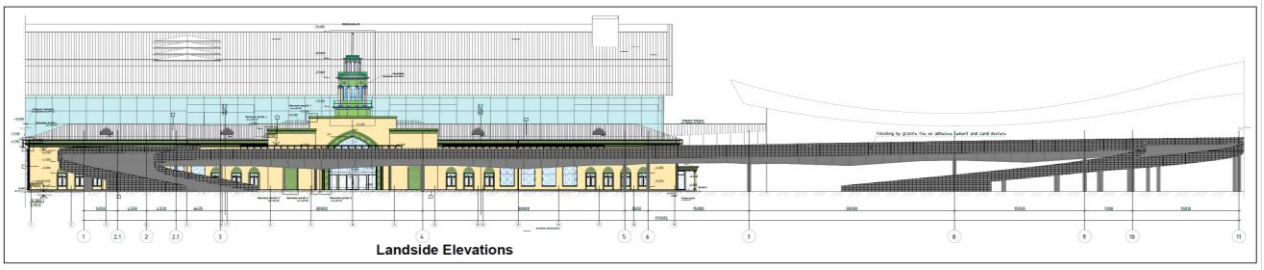
Operationally, this split-level design is desirable to separate arrival and departure passenger throughflow, also to meet with passenger comfort standards.

In addition to the two floors presented above, there will be the mezzanine floor, which is not illustrated. This would include the passenger transfer areas, and space for passenger lounges for later fit-out by third parties.

2.1.2 Vehicular Ramp

The vehicular ramp shown above would adjoin the existing ramp (which serves the existing PTB) as a continuation of this structure, allowing a split-level zone for passenger drop-off/pick up. This will segregate arrivals and departures before entering the terminal and there will be three passenger access bridges connecting the upper vehicular ramp level and Floor 2 of the passenger terminal. The access to Floor 1 from the lower ramp level would be at ground level, negating the need for access bridges, with access provided via the VIP terminal building. To enable this, some windows would need to be removed and new doorways created to allow sufficient passenger flow and emergency exits at ground level. The landside elevation of this ramp is shown in **Figure 2.3**.

Figure 2.3: Landside elevation showing access ramp in front of VIP terminal building



As can be seen on **Figure 2.4**, the upper level of the vehicular ramp would need to be at approximately the same height as the ceiling of the upper floor of the VIP terminal building. The reason for this ramp height is to allow sufficient headroom for larger vehicles on the lower ramp level, such as buses and coaches.

The upper ramp level's access to the new PTB therefore cannot be provided through the interior of VIP terminal building as the heights do not align. Three access bridges would be provided to enable this access. This would need to cut out space from the VIP terminal building roof area as shown on **Figure 2.4.** Passengers would therefore access Floor 2 of the PTB over these bridges from the vehicle ramp, through cuttings made in the VIP terminal roof.

Figure 2.4: Cutaway model image of access bridges from vehicle ramp

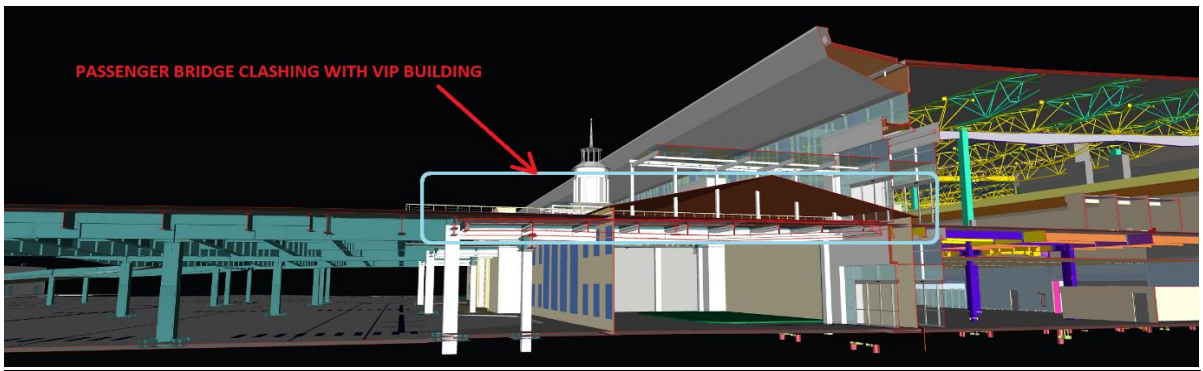


Figure 2.5, Figure 2.6 and **Figure 2.7** provide a visualisation of what this would look like, noting it doesn't show areas of cut-away from the VIP terminal building roof to facilitate the access bridges.

Figure 2.5: Engineering drawing cross-section

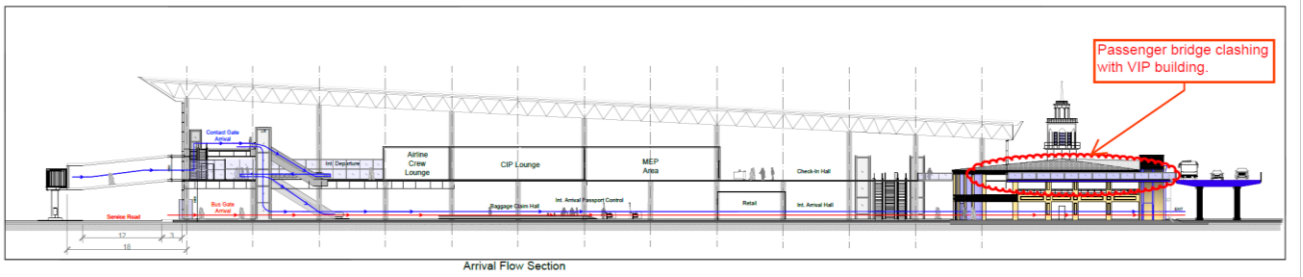
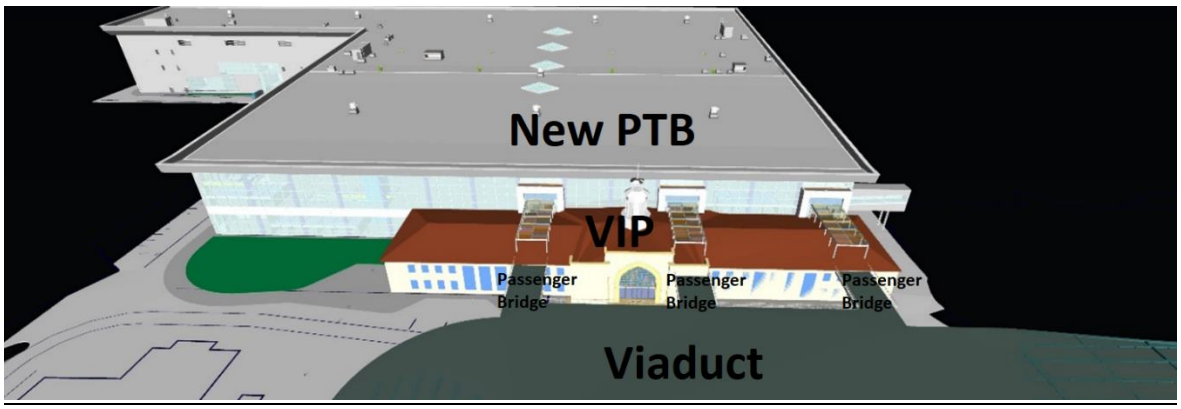


Figure 2.6: Landside visualisation of upper level of vehicle ramp and access bridges (1 of 2)

Figure 2.7: Landside visualisation of upper level of vehicle ramp and access bridges (2 of 2)



2.2 Other Constructability Considerations

There is a risk that due to the proximity of the VIP building to the new international terminal, the structural foundations of the new terminal could adversely impact the stability and structure of the VIP terminal building. At present the VIP terminal does not meet current Kazakhstan regulations relating to seismic risk. As such, any works to the VIP terminal would require additional structural reinforcement as the whole new building would need to be compliant.

Such works would likely change the visual amenity of the VIP terminal building. The scale of these works is not pictured in the visualisations above as those details have not yet been determined.

3 Option 2.2: Relocate VIP terminal building facilities

In this option, the VIP terminal building facilities would be relocated, with the new PTB using the space vacated. Key heritage features of the VIP terminal building would be transferred to a new building that would be designed in a similar style to the current building.

The relocated VIP terminal facilities would be located along Zakarpatskaya Street, south of the current terminal location, and would function as a building for general aviation and presidential suites for use by those invited to do so (such as visiting dignitaries of members of the Government).

The airside apron area by the new PTB would need to be extended westwards, but not as much as for Option 1.1 No apron extensions would be required in the area of the new building as it already adjacent to an apron used by private jets and general aviation.

3.1 Design Considerations

3.1.1 New terminal layout and design

The new PTB layout would be the same as that described for Option 1.1 in terms of internal functions but would not have the VIP terminal building integrated with it. The double-deck vehicle ramp system would be used, as per Option 1.1, extending from the existing ramp, with three bridges connecting the upper ramp level to Floor 2 of the PTB. This is shown in **Figure 3.1**.

Figure 3.1: Landside view of new PTB

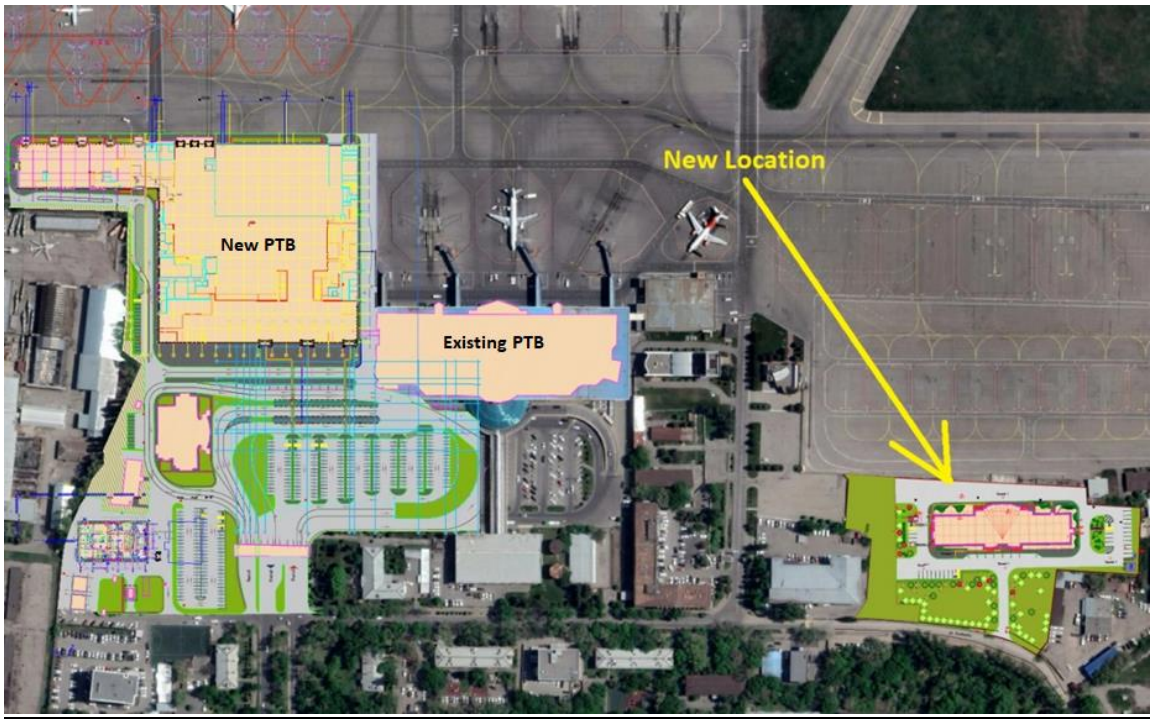
There would be space in front of the terminal to consider in the future a focal point looking down Mailin Street, although this would be a future consideration.

3.1.2 VIP terminal building and replacement

In order to accommodate the new PTB in this location, the current VIP building use would be relocated, with key heritage items retained. The new building, which would incorporate these

moved heritage items, would be constructed by the southern apron area, in a horizontal alignment to match the current aspect, as shown on **Figure 3.2**.

Figure 3.2: Location of new PTB and replacement VIP terminal building (as indicated by yellow arrow)



The VIP terminal building would function as general aviation and presidential terminal with separate entrances and exits for both. The presidential terminal would consist of a presidential lounge, offices for presidential staff, security staff and press members along with a press room.

The general aviation terminal would consist of an entrance foyer, security screening area, check-in and passport control, and departure and arrivals lounges. See **Figure 3.3** for an indicative layout floor plan. Note that only the ground floor would be used, and unlike the current building, a second internal floor is not proposed. The floor plan requirements of the replacement building have been agreed with the Government of Kazakhstan and their security requirements.

Figure 3.3: Replacement VIP terminal building floor plan

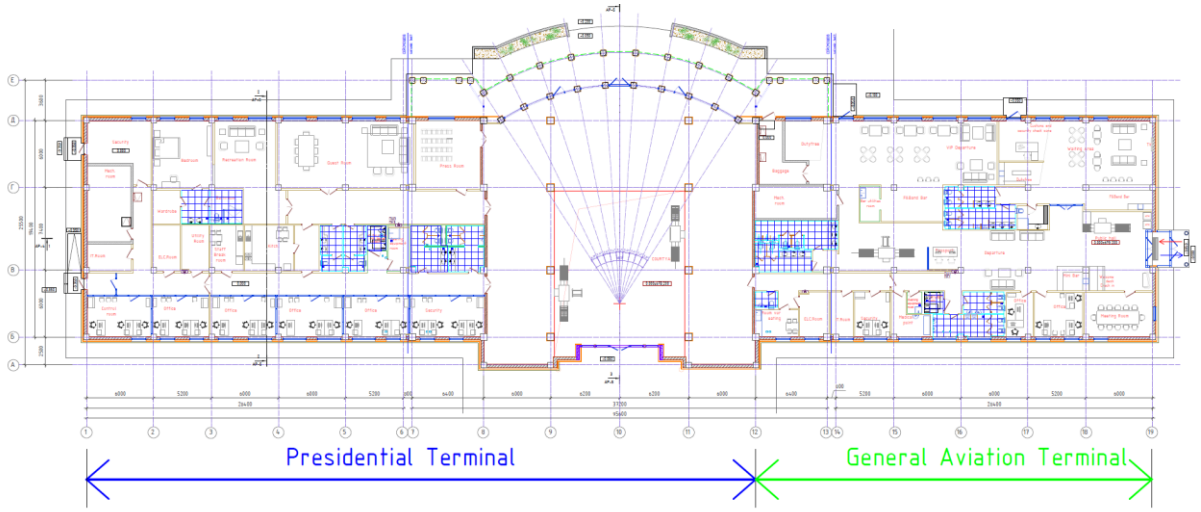


Figure 3.3 shows that the presidential terminal and general aviation terminal areas of the building would function separately, and they will have separate landside and airside entrances and exits, with the presential terminal area entrance using the central gallery of the building. The general aviation terminal aspects would use a new entrance on the south-western elevation of the building which doesn't feature in the original building.

The following functions would be provided for the presidential terminal, as agreed with the Government of Kazakhstan:

- President lounge (bedroom, dinner room, living room, toilets, shower);
- Offices for presidential staff, security staff and press members; and
- Press room.

The following functions would be provided as part of the general aviation terminal:

- Entrance area;
- Security screening and passport control;
- Check-in;
- Departure Lounge; and
- Arrival Lounge.

Airside, the new VIP terminal building would be integrated with the southern apron, which is already used by private and general aviation. Landside, a ground level vehicle entrance from Zakarpatskaya Street would be provided, with car parking and landscaping. It would form a visible feature from Zakarpatskaya Street.

The wider context of the proposed replacement building is shown in **Figure 3.4** and **Figure 3.5**.

Figure 3.4: Visualisaiton of the new building, as would be viewed from the air, landside

Figure 3.5: Visualisaiton of the new building, as would be viewed from the air, airside

The ground-floor area of the new building would be slightly larger than the existing VIP terminal building. This is achieved through a slight widening of the building. This is to meet the ground level floorspace requirements of the building's functions and has been designed so as to not affect the visual amenity main landside and airside building elevations. This is shown on **Figure 3.6** and **Figure 3.7.**

Figure 3.6: Side elevations of the widened VIP terminal building (north-western elevation on the left, south-eastern elevation on the right)

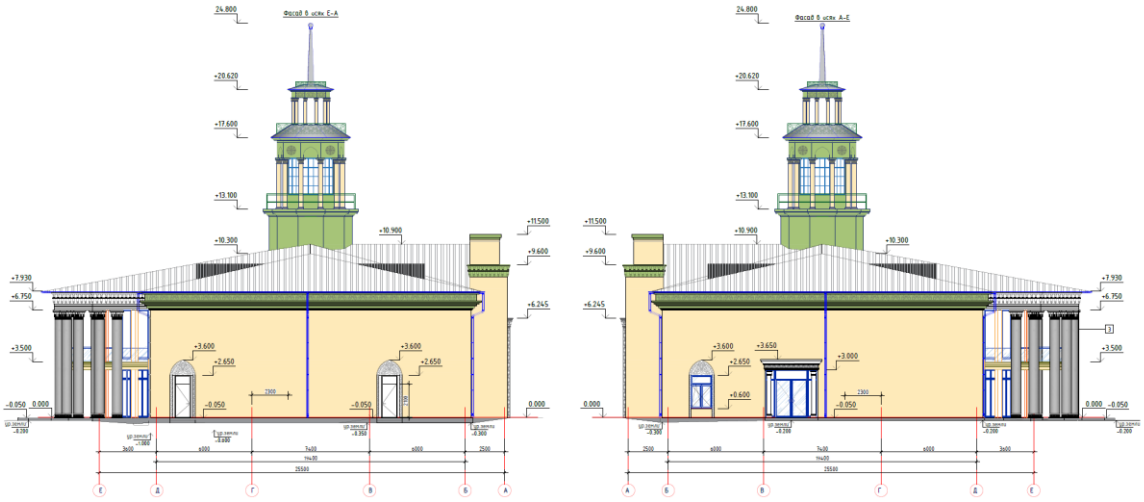
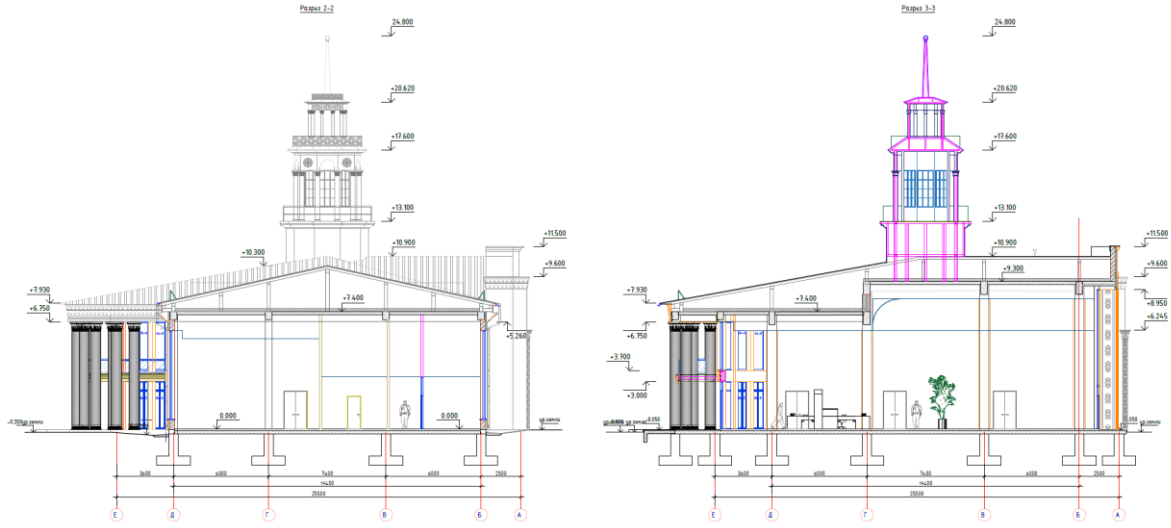


Figure 3.7: Side cross sections of the widened VIP terminal building (north-western elevation on the left, south-eastern elevation on the right)



The landside elevation (**Figure 3.8** and **Figure 3.9**) has been designed to heavily reflect the existing VIP terminal building. Changes proposed to this elevation compared to the original building comprise:

- Removal of the modern single-storey extension on the north-western end of the current building.
- An additional small window at ground level on the extreme ends of the landside façade – i.e. at both the north-western and south-eastern ends; and
- Removal of the modern entranceway at the south-eastern end of this façade.

Figure 3.8: **Proposed landside elevation of the new building**

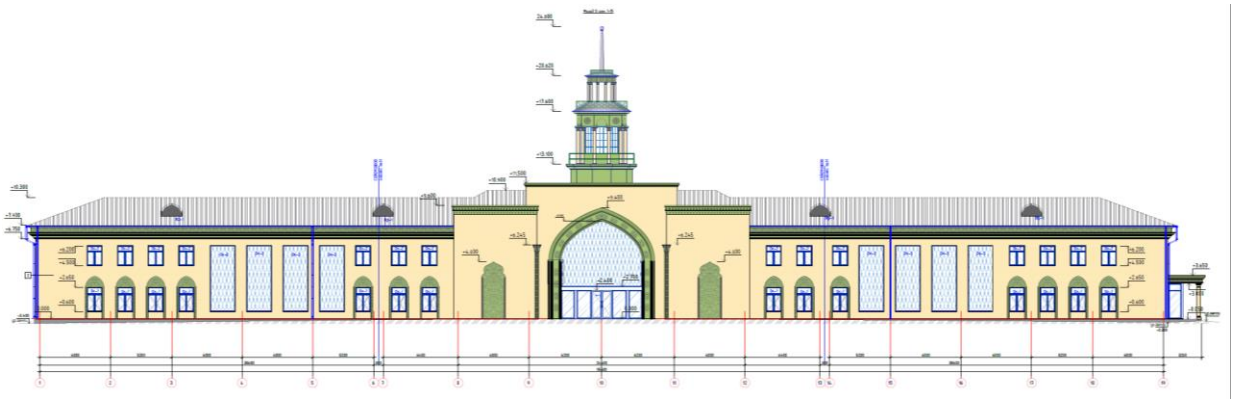


Figure 3.9: Landside visualisation of the new building

The airside elevation (**Figure 3.10, Figure 3.11** and **Figure 3.12**) has also been designed based on the existing VIP terminal building. Changes proposed to this elevation compared to the original building comprise:

- Re-incorporation of original-style balcony on the upper level, recreating the original building design;
- Additional ground level windows which match the existing style for similar windows to replace doorways that are no longer required; and
- Replacement of the previous bridge connecting the VIP terminal building to the current PTB with a window.

Figure 3.10: Proposed airside elevation of the new building

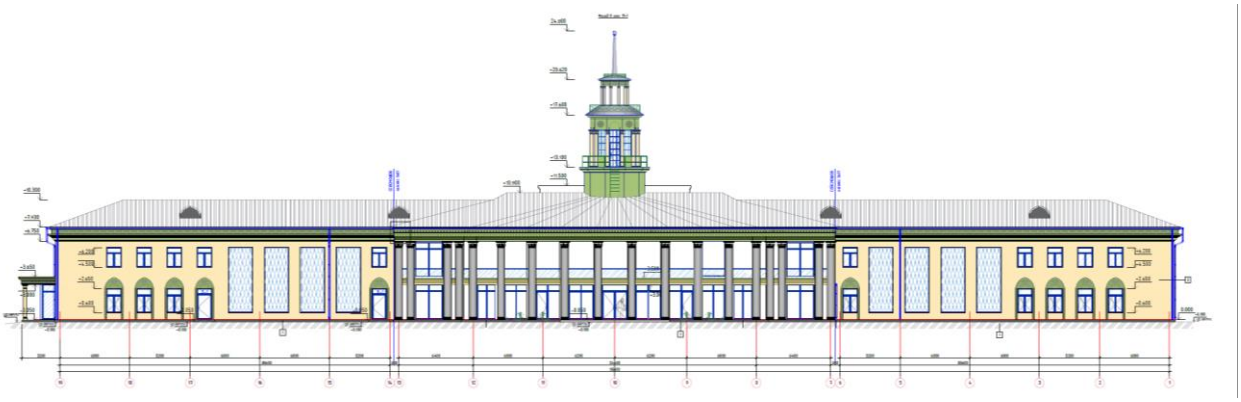


Figure 3.11: Cross sectional drawing of the airside elevation of the new building

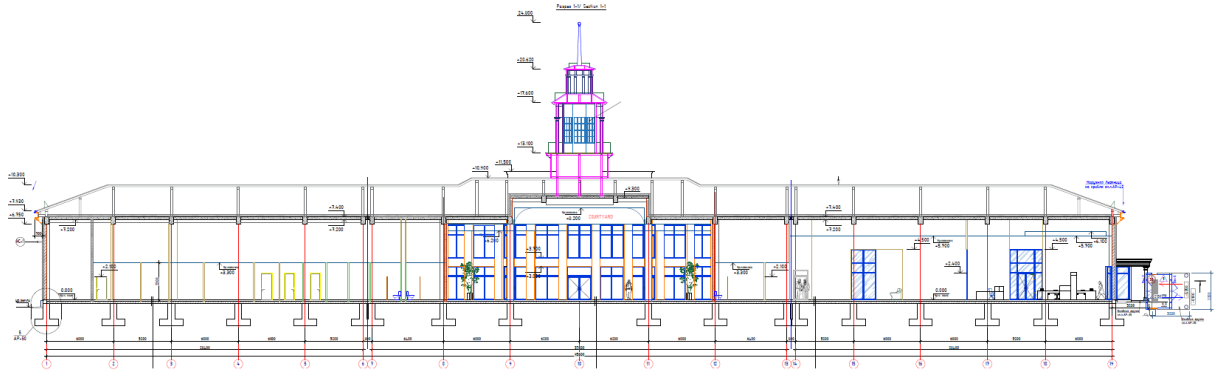


Figure 3.12: Airside visualisation of the new building

The stained-glass window above the landside entrance is considered to be a key heritage feature of the existing building. It is proposed to move this feature to the new building so that it can be retained. This process would see each windowpane removed, the frame removed and

then re-inserted into the replacement building, with each window pane put back in the original location.

Other heritage features would be considered for relocation to the new building for preservation where possible. It was specifically considered whether the belvedere tower on top of the existing building could be moved across, but this was determined to not be possible as the structure was likely to fail during the move. A new belvedere tower would be constructed instead, although the needle on top may need to be retractable to meet aviation safety requirements given the building's proximity to the runways.

3.2 Other Constructability Considerations

The building would be constructed to meet seismic structural regulations from the start, without affecting the visual quality of the building. This will increase the longevity of the building.