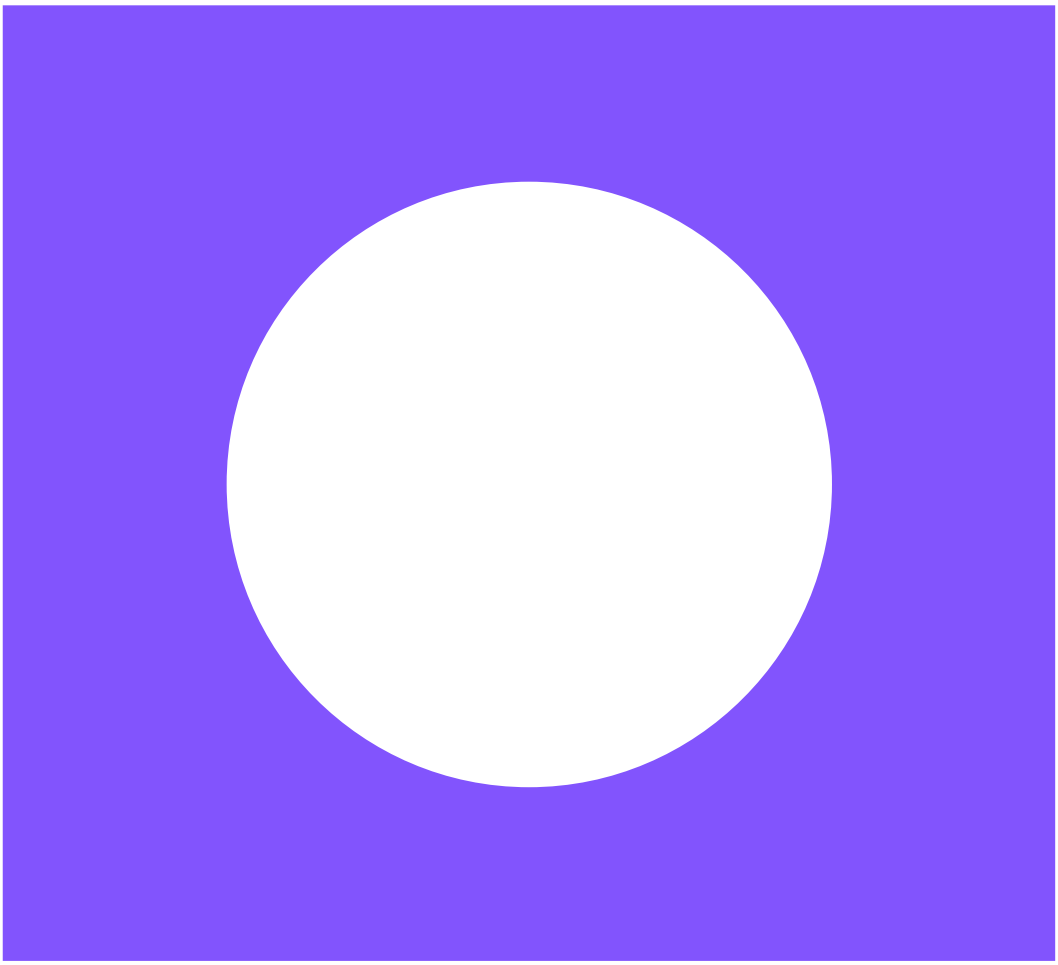
MOTT MACDONALD



Almaty International Airport

Environmental and Social Impact Assessment Report - Chapter 12

September 2025

This page left intentionally blank for pagination.

Mott MacDonald
10 Fleet Place
London EC4M 7RB
United Kingdom

T +44 (0)20 7651 0300
mottmac.com

Almaty International Airport

Environmental and Social Impact Assessment Report - Chapter 12

September 2025

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	31/07/2025	EK/ES	GW	KD/BM	Draft report
B	05/09/2025	EK/ES	GW	KD/BM	Updated report following external comments
C	12/09/2025	SM	KD	BM	Updated report with minor amendments following external comments

Document reference: 100124651 | ESIA Report Chapter 12 | C

Contents

Tables

Figures

Acronyms and abbreviations

Abbreviation / Acronym	Definition
ALA	Almaty International Airport
AOCC	Airport Operations Control Centre
ATC	Air Traffic Control
ATMs	Air Traffic Movements
BAKAD	Big Almaty Ring Road
EBRD	European Bank for Reconstruction and Development
EHS	Environmental, Health, and Safety
EPC	Engineering, Procurement, and Construction
ESIA	Environmental and Social Impact Assessment
ESR	Environment and Social Requirement
IFC	International Finance Corporation
HGV	Heavy Goods Vehicle
NOTAM	Notice to Airmen
PPE	Personal Protective Equipment
RWY	Runway
SAS	Surface Access Strategy
TMP	Traffic Management Plan

12 Traffic and transport

12.1 Introduction

12.1.1 This chapter of the Environmental and Social Impact Assessment (ESIA) reports the findings of a review of existing data and proposed Project information and considers the likely impacts and risks to users of the transport network. The review informs the possible significant environmental effects on traffic and transport identified in this chapter as a result of the Project.

12.1.2 An assessment of possible significant effects has been undertaken for each of the sensitive receptors identified in the study area. Where necessary, commitments to mitigation measures have been made to manage any impacts on receptors.

12.1.3 Impacts on users of the transport network would be generated from Project related traffic movements, transportation of materials and equipment to site, transport of waste from site, as well as the commuting of personnel and passengers to and from the Airport.

12.2 Methodology

12.2.1 This section of the ESIA chapter presents the methodology applied to the assessment of impacts. The assessment of potential transport network effects has been carried out in accordance with the methodology outlined in **ESIA Chapter 4: ESIA scope and methodology**, which includes sensitivity of the receptor, the magnitude of the potential impact, and the significance of effects.

Applicable guidelines and standards

12.2.2 The assessment has been undertaken considering relevant legislation, standards, and guidance as summarised in the sections below in addition to those mentioned in **ESIA Chapter 3: Policy, legal and institutional framework.**

National requirements

12.2.3 The Republic of Kazakhstan has established a legal and regulatory framework to ensure the safe and efficient management of road traffic associated with infrastructure projects, including airport expansions. The most relevant legislation is the Law on Road Traffic (No. 194-V, 2014), which aims:

"To establish the legal foundations and general conditions for the functioning of road traffic and the provision of its safety in the Republic of Kazakhstan."

12.2.4 This law outlines the responsibilities of project developers, road users, and authorities in maintaining traffic safety and regulating vehicle movement. It provides the basis for traffic planning, infrastructure design, and operational safety, including:

- Design and classification of roads, including highways and access roads to major facilities
- Traffic regulation mechanisms, such as signage, markings, traffic lights, and enforcement
- Vehicle operation standards, including technical compliance and safety features
- Pedestrian and cyclist infrastructure, including dedicated paths and crossings

12.2.5 In addition to the Road Traffic Law, the Traffic Rules of the Republic of Kazakhstan (approved by Government Resolution No. 1196, 2014) establish a unified procedure for road use across the country. These rules define:

- Access control and intersection design for high-capacity roads
- Traffic flow management during construction and maintenance activities
- Temporary traffic control measures, including detours and signage for construction zones

International requirements

International Finance Corporation (IFC) requirements

12.2.6 The IFC provides a suite of Performance Standards and Environmental, Health, and Safety (EHS) Guidelines that must be followed for projects seeking IFC financing. For traffic-related impacts, the most relevant is IFC Performance Standard 4: Community Health, Safety, and Security, which aims:

"To anticipate and avoid adverse impacts on the health and safety of the affected community during the project life cycle from both routine and non-routine circumstances."

12.2.7 To meet this objective, the IFC requires projects to assess and manage risks related to traffic safety, infrastructure capacity, and community exposure to increased vehicle movements. The IFC General EHS Guidelines and IFC EHS Guidelines for Airports (2007) provide specific recommendations for managing land-side traffic impacts, including:

- Conducting traffic impact assessments for new or expanded facilities
- Designing access roads and intersections to accommodate projected traffic volumes safely
- Implementing traffic control measures during construction to minimise disruption and risk
- Ensuring emergency access and pedestrian safety are maintained throughout the project

12.2.8 Where national traffic safety or road design standards are absent or less stringent, the IFC encourages the use of internationally recognised best practices, such as those from the World Bank Group or EU transport directives. The Project will therefore be structured to comply with both national regulations and IFC guidance, applying the more stringent standard where applicable.

European Bank for Reconstruction and Development (EBRD) requirements

12.2.9 The Project has also been assessed against the EBRD Environmental and Social Policy (October 2024), specifically Environment and Social Requirement 1 (ESR1): Assessment and management of environmental and social risks and impacts; and Environment and Social Requirement 4 (ESR4): Health, Safety, and Security. The objectives of ESR1 and ESR4 can be summarised to require a project:

- To adopt a mitigation hierarchy to address environmental and social risks and impacts
- To avoid or minimise the risks to and impacts on the health and safety of workers and affected communities.

12.2.10 ESR1 and ESR4 require that transport and traffic-related risks—such as congestion, road safety, and construction-related disruptions—be identified early and addressed through appropriate mitigation measures. The EBRD also mandates that:

- Projects be designed to meet EU substantive standards where applicable.
- Operational and construction traffic management plans be developed to reduce risks and impacts on the public and ensure continuity of access.
- Monitoring and adaptive mitigation and management measures be implemented to respond to evolving traffic conditions during both construction and operation.
- In cases where Kazakhstan's national traffic regulations differ from EU standards, the EBRD requires the Project to adopt the more stringent of the two. This ensures that the Project

aligns with international best practices in traffic safety, infrastructure resilience, and community protection.

12.2.11 In addition, Briefing Note BN08[1] (January 2025, Version 1) provides guidance on minimising risks related to vehicles and pedestrian movement in workplaces, emphasising risk assessments, safe site layouts, vehicle control, and the development of a comprehensive Traffic Management Plan to ensure safety and compliance with EBRD standards.

Area of Influence

12.2.12 The airport is located approximately 12km to the north-east of central Almaty, on the outskirts of the city. It is bordered by a mix of open land and residential settlements. The airport is located north of the settlement of Guldala, and north-east of other city districts, including Tbilisskaya and Kolhozshy, all of which lie within the wider region of Almaty.

12.2.13 The study area includes the proposed access road to the Project site, Mailin Street, as well as the existing and proposed transportation network and access roads around the Project site and communities settled along these roads. The area of influence extends with regard to the main commuting and transport routes of users of the site including workers, visitors, passengers as well as goods and vehicles.

12.2.14 The areas most likely affected include Amresek, Guldala, Panfilovo, and Turksib (see Figure 12.1). These neighbourhoods fall within or near a 1.5km zone surrounding the airport. Amresek and Guldala, in particular, are situated along routes that GPS navigation systems commonly use to direct vehicles traveling to and from the airport. This has led to increased traffic flow through residential streets, especially during peak hours and periods of high flight activity. The Turksib Akimat has expressed concerns about congestion in these areas, noting that the streets are often very busy during times when international flights arrive. Panfilovo, while slightly further out, is still within the zone and connected to the airport via key transport corridors, making it susceptible to overflow traffic.

12.2.15 The primary roads facilitating access to the airport are designated as the A351 and A3. These are major arterial routes that serve as the key access routes of the airport's connectivity to the broader Almaty region. The A351 and A3 are regional highways, and their proximity to the airport makes them the main conduits for passenger and cargo movement.

12.2.16 The spatial relationship between the airport, its access roads, and surrounding neighbourhoods clearly indicates that Amresek, Guldala, Panfilovo, and Turksib are likely to be the most impacted by Project related land traffic.

[1] European Bank for Reconstruction and Development. (2025). Working safely around workplace transport (BN08). EBRD Briefing Note, Version 1. https://www.ebrd.com/content/dam/ebrd_dxp/assets/pdfs/environment---sustainability/implement-performance-requirements/prs/briefing-notes-6-10/english/EBRD_HS_BN08.pdf

Figure 12.1: Almaty Airport 1.5km area around the Almaty Airport by neighbourhood

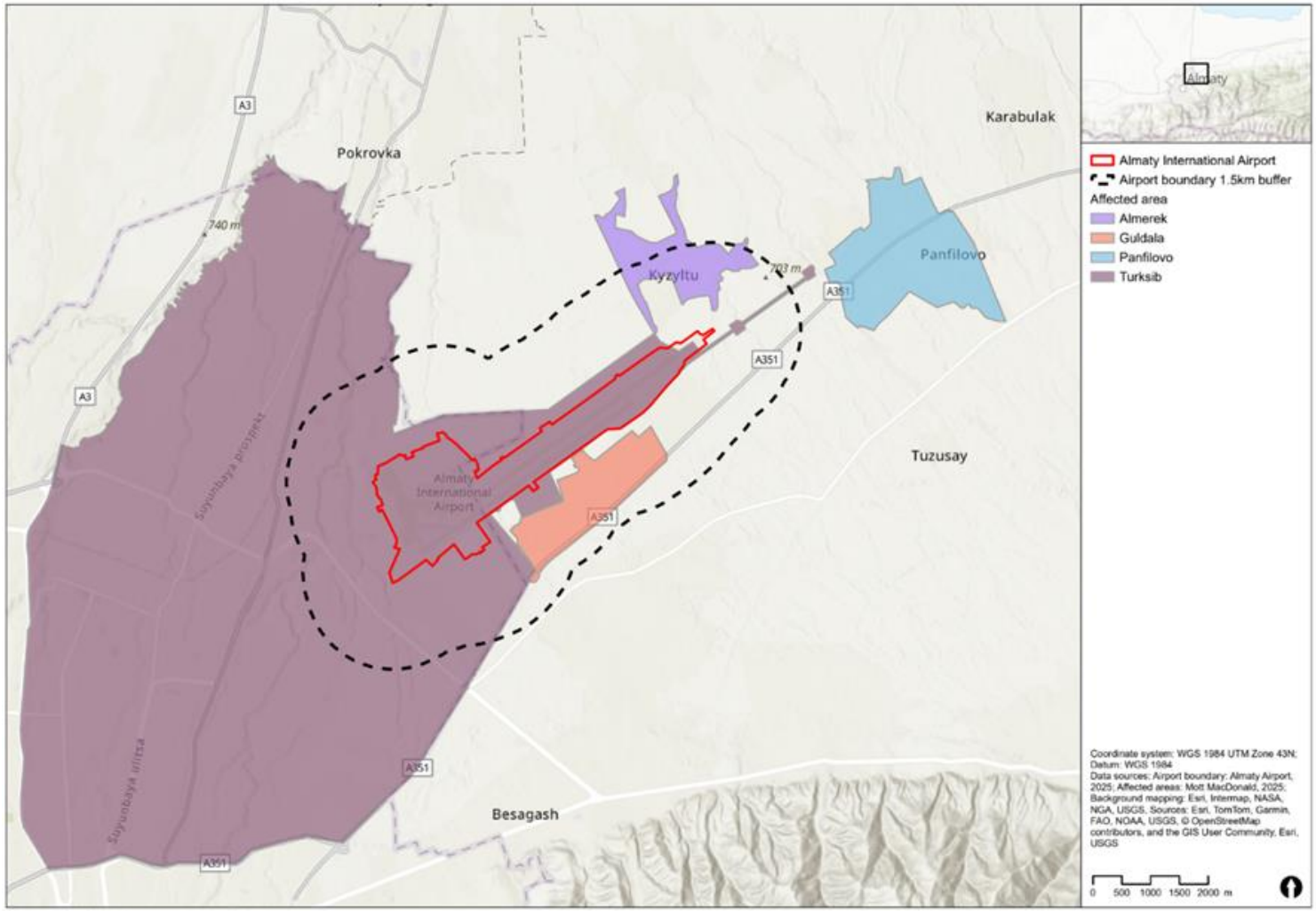
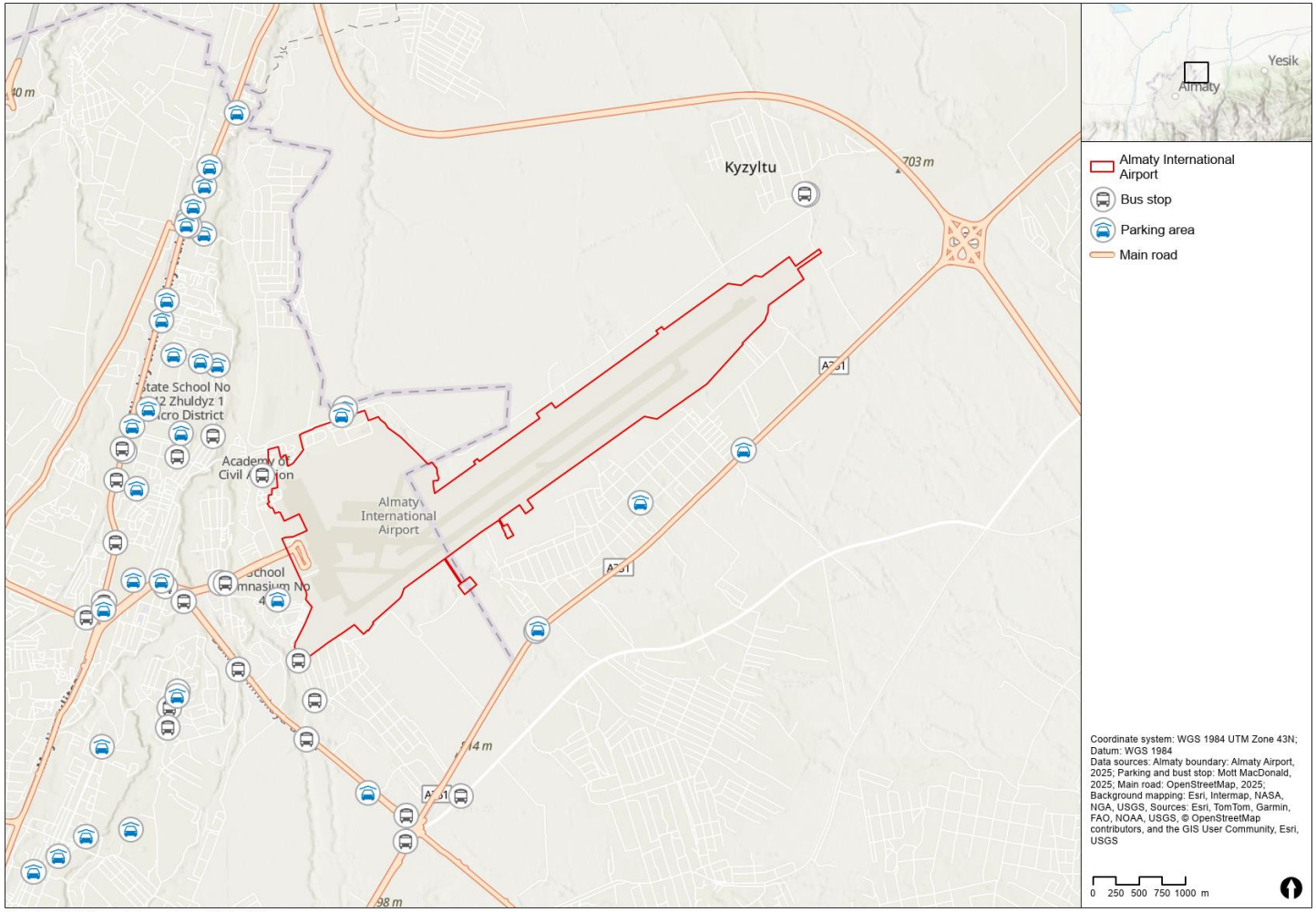


Figure 12.2: Transport network around Almaty International Airport



Almaty Airport ESIA | Transport - Transport network | 20 Aug 2025

Methodological approach

12.2.17 The traffic and transport impact assessment has been informed by a review of relevant and available secondary data sources. Secondary data has been drawn from existing traffic statistics, airport master plans, and relevant planning documents. Design layouts for new and upgraded facilities have been reviewed to understand future traffic generation and circulation patterns.

12.2.18 Baseline conditions have been established by analysing current (or historically available) traffic volumes. The assessment has identified existing constraints such as congestion points, limited access points, and parking capacity. Freight and service vehicle routes within and around the airport have also been investigated to understand operational traffic flows.

12.2.19 The magnitude of impact has been assessed by evaluating projected changes in traffic volume, potential degradation in existing conditions, increases in heavy vehicle movements, and the extent and duration of construction-related disruptions. The assessment has distinguished between impacts during the construction and operational phases.

12.2.20 The significance of effect has been determined by combining receptor sensitivity with impact magnitude, following the matrix-based approach described in Table 4.4 in **ESIA Chapter 4: ESIA scope and methodology**. Where the significance of impacts is identified as **moderate adverse** or **major adverse**, appropriate mitigation measures have been proposed to reduce their significance to acceptable levels. The impact assessment is based on professional judgement and interpretation of the data available.

Limitations and assumptions

12.2.21 Baseline traffic conditions at the access roads around the airport, as well as terrestrial traffic count data and traffic modelling for the construction and operational phases of the Project have been limited to date. This chapter has been prepared using publicly available data and information provided by Almaty International Airport (ALA) has been used to estimate baseline conditions and expected traffic load during construction and operation.

12.2.22 For the construction phase, data has been received that includes volumes of excavation and demolition waste material, as well as information on reuse and disposal practices. These figures have informed the impact assessment of road traffic volumes related to material transport and waste management activities during construction.

12.2.23 The assumptions related to accommodation camp location, transport mode (shared minibuses or public transport), and on-site welfare provisions may not fully represent the arrangements for all contractors involved in the Project. This limitation has been considered when interpreting workforce-related traffic and infrastructure impacts.

12.2.24 Regarding the operational phase, current data includes the weight of waste generated at the airport. This has been used to provide an assumption of servicing and deliveries associated with the airport.

12.2.25 Forecasts have been updated using the Base Case projections from July 2025 technical studies (Noise & Vibration modelling inputs and Project Horizon Traffic Forecasts Outputs V6.0[2]), supplemented by transfer/transit adjustments from the Traffic Advisor memorandum.

[2] Mott MacDonald (2025). Project Horizon Traffic Advisor in relation to the new Investment plan of Almaty International Airport in Kazakhstan, Traffic Forecasts Outputs (Base, Low, Climate) - DRAFT (NONRELIANCE BASIS), Version 6.0, 29 July 2025.

12.3 Baseline

Current baseline

Transportation infrastructure in Almaty region

12.3.1 The Almaty region benefits from strategically important transport network, serving as a key hub along the main corridor connecting South-East Asia and Europe. The region is integrated into national and international transport systems through road, rail, and air links, supporting both passenger and freight movement. Railways play a significant role in long-distance travel and trade across Kazakhstan and with neighbouring countries such as Russia, China, and other Central Asian states. Within this broader context, ALA, operational since 1935, is playing a critical role in facilitating domestic and international air travel and cargo transport. The airport is primarily accessed by road, which connects it efficiently to Almaty city and surrounding areas, supporting the movement of passengers, goods, and construction-related logistics.

12.3.2 According to the 2022 ESIA data, within the Almaty region there are 317 bus transport routes including 47 intra-city, 126 intra-regional, 40 intra-district and 104 suburban routes. Overall, 33 private bus operators in the regions provide transportation services via 14 central bus stations and two bus terminals in Taldykorgan and Kapshagai[3]. The roads in the region have a total length of 9,316.8km including 27% of national roads (2,529km) and 73% of regional and local roads (4,787.8km). About 72% of regional roads have black macadam coating (4,861.8 km), about 11% have asphalt pavement (788km), 15% are gravel-macadam coated (1,020km) and 2% are unsurfaced (earth) roads (118km).

12.3.3 Transport remains a major concern in Almaty and there is currently no direct rail access to ALA. Although several interchanges and the Big Almaty Ring Road (BAKAD) have been completed, rapid population growth and increasing car ownership strain the system. Public transport provision is at 65.7%, road infrastructure at 89.8%, and street lighting at 84.0%. By 2024, it was estimated that the city needed 1,000 more buses, 200 trolleybuses, and 30 new routes. To address this, Almaty has adopted a Transport Master Plan to 2030, aiming to develop multimodal corridors, expand the metro, convert buses to gas and electricity, and build three major transport hubs. By 2026, the plan envisions 14 transport corridors and a more mobile, accessible city. There are also plans to connect BAKAD with the airport entry by a straight road to bypass the residential areas[3].

12.3.4 As mentioned in **ESIA Chapter 8: Community,** Turksib Akimat reported that GPS apps and digital maps are directing traffic from BAKAD through the residential areas of Almerek and Guldala. The Akimat expressed concern that these streets are already congested during peak hours and when most international flights arrive. However, the Akimat also mentioned that the airport has adjusted its night flight schedule to help alleviate traffic.

Traffic in the vicinity of the airport

12.3.5 According to the 2022 ESIA, it was reported that seven bus routes connect the city and airport and will allow commuting to the Project. However, only one bus route operates at night. A bus trip from the city may take 30-55 minutes by e-ticket or cash. Another two options to commute to the airport are travelling by car or taxi. Three taxi operators provide taxi service in the city, including a low-cost taxi operator.

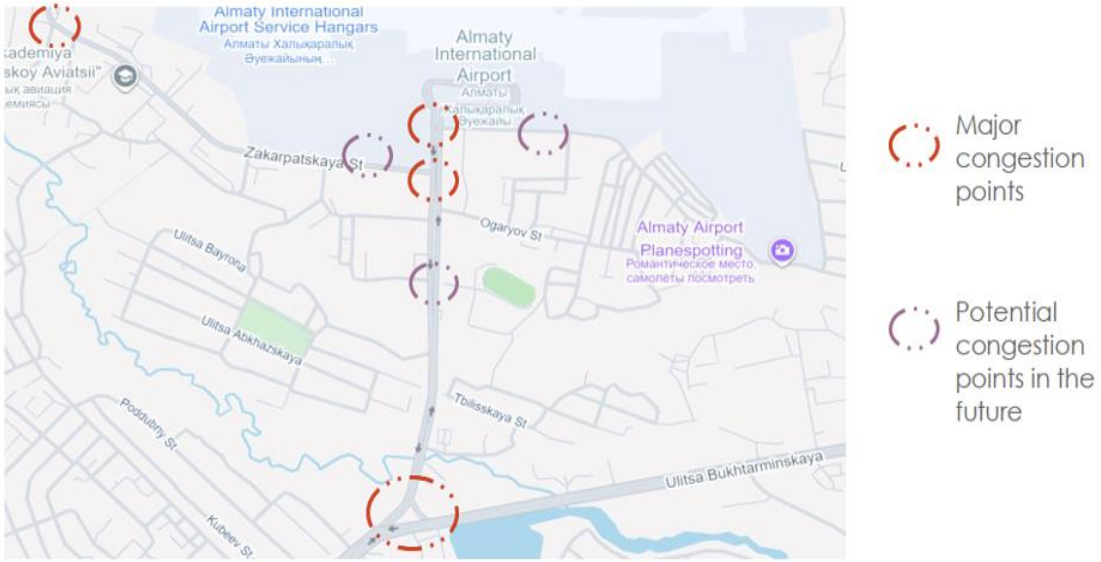
12.3.6 Considering the limited detailed traffic information for existing and future traffic flows, existing traffic flows along Mailin Steet have been estimated from a three-day traffic survey undertaken

[3] Institute of Economic Research (2024) Infrastructure development in Almaty. https://eri.kz/ru/Novosti_instituta/id=6390

in 2021 which informed the 2022 ESIA. According to this survey, the volume of flows (total) at Mailin Street was 44,500 vehicles. This has been used to estimate the proportion of traffic on Mailin Street that is associated with the airport using data from the airport vehicle entrance and exit barriers and the proportion which is local road traffic. This survey indicated that approximately 60% of traffic on Mailin Street was local traffic and the remaining 40% was associated with the airport[4].

12.3.7 Major congestion points in the vicinity of the Airport are presented in Figure 12.3. Accordingly, Zakarpatskaya, Ogaryov, and Mailin Streets are critical corridors for airport access and may require targeted traffic management interventions to maintain uninterrupted flow during and after the expansion works. Mailin Street is the main corridor which has three major congestion points indicated and one potential point in the future. While the map highlights specific areas of concern[5], congestion patterns can vary along these corridors, especially during peak hours.

Figure 12.3: Major and potential congestion points in the vicinity of the Project



Source: ALA, 2025

Current traffic at the airport

12.3.8 A traffic management procedure is currently applied at the airport, involving access control systems and designated parking zones to regulate vehicle flow and support operational efficiency. ALA offers free parking for up to 15 minutes, limited to two entries per day. Beyond that, parking fees range from KZT 300 to KZT 3,500 depending on the duration (from one to 24 hours) and parking area which consists of four designated zones[6]. ALA's existing car parking capacity is approximately 1400 cars, including at least 16 spaces for disabled parking. Parking for disabled users is free of charge.

12.3.9 An evaluation of access barrier data at the airport from January 2024 through May 2025 reveals seasonal fluctuations in vehicle entries and exits.

12.3.10 The data indicates that activity is highest during the winter and spring months. December 2024 and January 2025 recorded some of the highest volumes, with daily vehicle counts exceeding

[4] Since the data is collected from main gates (entrance) of the ALA, this represents the ratio of the roads on the western side (especially, Mailin St.).

[5] Transferred from ALA and no surveys have been conducted on these streets.

[6] Almaty International Airport. https://alaport.com/en-EN/park/page/parking

20,000. This elevated demand continued into March, April, and May 2025, suggesting a sustained period of increased airport usage during the late winter and spring seasons. In contrast, the months of October and November 2024, as well as February 2025, exhibited slightly lower levels of parking activity. During these months, the average daily vehicle entry count was approximately 19,000, representing a slight decrease compared to the peak winter months.

12.3.11 Overall, the review confirms that parking demand at the airport is subject to slight seasonal variation, with peaks during the colder and transitional months. These findings are essential for informing the design and operational planning of future parking infrastructure, ensuring that capacity is aligned with observed demand patterns. The results also highlight the importance of flexible operational strategies to accommodate fluctuations in usage throughout the year.

Current construction traffic management practices

12.3.12 Additional traffic load on the existing road network will be generated by transportation of materials and equipment/consumables, transport of waste and excavation materials from the site and daily commute of personnel to and from the Project. A substantial volume of excavation and demolition waste is expected to be generated during the construction phase of the Project. The total estimated waste amounts to approximately 2,023,738m³ (or 3,342,258 tonnes). Of this, around 1,068,627m³ (52.8%) will be reused on site, either directly or following chemical processing. The remaining 955,112m³ (47.2%) will be removed from the site, requiring off-site transport and disposal. Please refer to **ESIA Chapter 13: Waste and resources** for detailed information.

12.3.13 Based on the above tonnes of excavation and demolition waste to be transported off-site during the construction phase, and assuming a truck capacity of 15m^3 and a weight limit of 20 tonnes, the total number of truck trips required is approximately 78,700.

12.3.14 This material movement will contribute significantly to traffic volumes on surrounding roads. It underscores the need for careful logistics planning and traffic mitigation measures, especially during peak construction periods (October 2025 to November 2027), when approximately 426 workers of YDA (one of the Engineering, Procurement, and Construction (EPC) contractors) will also be commuting daily.

12.3.15 A Construction Traffic Plan has been developed to manage the movement of vehicles and personnel within the Project site during the construction phase. The plan is designed to ensure safety, maintain operational continuity, and minimise risks such as runway incursions and foreign object debris. According to the plan:

- Construction access will be controlled through designated gates. Specific routes have been assigned for each construction phase, with clear signage and traffic flow controls in place. Accordingly, representatives of the contractor, equipment, vehicles and drivers enter the territory of ALA from the landside via gates North-East of Runway (RWY) 05L/23R and via Gate 11 North-West of RWY 05L/23R (see Figure 12.4).
- All vehicle movements will be supervised by airport authority personnel, and vehicles will undergo inspections to ensure compliance with airside safety standards. Vehicles without radio communication or required safety features will be escorted as per aviation regulations.
- Coordination with Air Traffic Control (ATC) and the Airport Operations Control Centre (AOCC) will be maintained throughout construction to avoid interference with aircraft movements. High-risk intersections will be strictly controlled and Notice to Airmen (NOTAM) will be issued as needed to manage temporary closures.
- Contractors are responsible for ensuring that all personnel are trained in airside safety and driving procedures. Designated parking areas for construction equipment have been

established, and traffic schedules will be managed to avoid peak airport hours. The construction equipment parking area is presented in Figure 12.5.

- Following the completion of each construction phase, all equipment will be removed, the area will be cleared of debris, and pavement markings will be restored to prepare the site for operational use.

Figure 12.4: Construction equipment/vehicle route to construction areas

Source: ALA, The Horizon" project Construction Traffic Plan, ALA

Figure 12.5: Construction equipment parking area

Source: ALA, The "Horizon" project, Construction Traffic Plan, ALA

Future baseline

12.3.16 Future traffic numbers associated with the expansion of the airport have been estimated within the scope of 2022 ESIA. Table 12.1 presents the traffic data used in that assessment as part of the Air Quality assessment for the 2022 ESIA.

Table 12.1: Assumed traffic data

Road	2021 flows (total)	2031 without Scheme*	2031 with Scheme*
Mailin Street	44,500 (3.3% Heavy goods vehicles (HGV))	48,300 (3.3% HGV)	58,500 (3.3% HGV)

*Scheme refers to the development assessed within the 2022 ESIA. It is assumed that this Project is included within the traffic estimates in the 2022 ESIA.

Source: 2022 ESIA

12.3.17 The traffic data have been estimated based on future passenger projections assuming a linear relationship between passenger numbers and the airport vehicle entrance numbers in 2019. Local traffic has been assumed to remain constant in future years and only the proportion of traffic related to the airport has been assumed to increase as the areas around Mailin Street are not expected to be further developed.

12.3.18 It is important to note that these figures were calculated for the 2022 ESIA and may not fully account for the traffic impacts of the Project. Given the broader scope and increased scale of the Project, it is anticipated that more increase in traffic volumes than those projected in the 2022 ESIA may occur. This is because the current Project includes additional elements such as expanded infrastructure, new developments, and potentially higher construction traffic. All these factors contribute to a higher overall traffic volume.

12.3.19 The Project's future traffic has been aligned to the latest forecasts Project Horizon Traffic Forecasts V6.0, July 2025[2]. Under the Base Case[7], ALA is expected to handle approximately 12.0 million passengers and 83,115 annual air traffic movements (ATMs) in 2025, increasing to 16 million and 109,710 movements by 2030, 22.3 million and 149023 movements by 2040, and 28 million and 188,425 movements by 2050. These forecasts also consider that an increasing number of passengers will be transfer or transit passengers, which is about 1.2 million by 2030 and up to 20% of total traffic by 2055 that does not leave the airport and therefore does not generate road trips. This means the growth in road traffic will be slower than the overall passenger growth. Accordingly, Mailin Street traffic estimates have been calculated based on several assumptions.

12.3.20 The starting point for the analysis was the 2021 traffic survey, which recorded 44,500 vehicles per day on Mailin Street, with approximately 40% of this traffic attributed to airport activity and 60% classified as local traffic.

12.3.21 Local traffic was assumed to remain constant at around 26,700 (60% of 44,500 local traffic) vehicles per day because no major new developments are expected along this corridor. The airport-related component, approximately 17,800 (40% of 44,500 airport related traffic) vehicles per day in 2021, was scaled in proportion to the growth in origin/destination passengers rather than total passengers. This adjustment accounts for the increasing share of transfer and transit passengers, who do not leave the airport and therefore do not generate road trips. For example, in 2030 the total passenger forecast is 16 million, of which about 1.2 million are expected to be transfer or transit passengers, resulting in an origin/destination passenger base of approximately 14.8 million, which is an increase of about 19% compared to the 2025 baseline of 12 million.

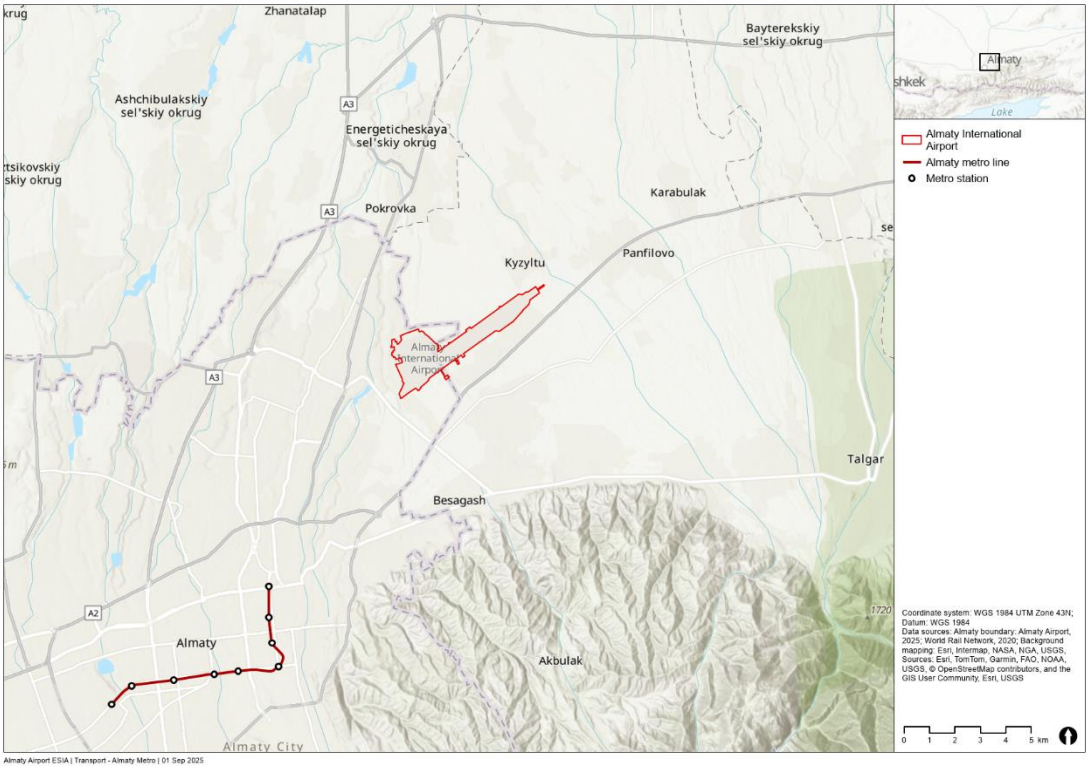
[7] The Base Case assumes steady economic growth and timely fleet deliveries. The Low Case reflects a downside scenario with slower GDP growth, delayed aircraft deliveries, and later easing of Russian airspace restrictions. Under the Low Case, passenger volumes in 2050 are approximately 12% lower than the Base Case, which would proportionally reduce airport-related road traffic. However, even under this scenario, Mailin Street volumes remain significantly above current levels, and congestion risks persist without mitigation.

12.3.22 Applying similar methodology and growth factors to the airport-related traffic gives an estimated 21,400 vehicles per day in 2030, which, when added to the constant local traffic, results in a total of approximately 48,000 vehicles per day. Similar calculations for 2040 and 2050 respectively, produce estimated totals of about 54,000 and 60,000 vehicles per day.

12.3.23 To reflect seasonal peaks observed in barrier entry data, these figures were conservatively adjusted upward to produce the indicative values, which are approximately 52,000 vehicles per day in 2030, 58,500 in 2040, and 65,000 in 2050, reported in Table 12.2.

12.3.24 In addition, the airport's car park capacity is an issue where ALA expects a shortage of at least 2,500 parking spaces as passenger traffic reaches approximately 19M. The Airport's Landside development plan in the context of Project Horizon foresees car park capacity to be expanded from the current 1,400 to 3,000 spaces in four years. It is to be noted that the second line of the Almaty Metro (Figure 12.6), to connect Zhibek-Zholy station to Almaty International Airport, is highlighted in the city's Master Plan to 2040 as a major infrastructure project aimed at improving urban mobility and airport accessibility. The core aim is to reduce private car usage by 20% and increase public transport usage by 60%. This new line would be expected to significantly reduce road congestion, especially along key access routes such as Zakarpatskaya, Ogaryov, and Mailin Streets, which are currently under pressure due to existing traffic levels.

Figure 12.6: Almaty metro line and stations



12.4 Potential impacts

12.4.1 The following potential impacts on land traffic have been identified as a result of the proposed airport expansion:

Construction

- Increased traffic due to construction activities

  - Increased vehicular traffic volumes on access roads
  - Higher freight and logistics traffic, especially related to the new cargo apron, warehouses, and fuel farm expansion
  - Potential conflicts between construction traffic and regular airport operations, including emergency access
  - Temporary road closures and detours during construction, affecting internal circulation and external connectivity
- Quality of the roads
  - Increased pressure on existing road infrastructure, including access roads, intersections, and parking facilities, which may exceed their current design capacity if upgrades to roads, signage, and traffic control systems are not implemented in parallel
- Road safety
  - Congestion at key intersections and terminal access points, particularly during peak hours
  - Safety risks to pedestrians and road users, particularly in areas with mixed traffic or construction activity
- Nuisance
  - Air quality and noise impacts from increased traffic volumes and construction vehicle movements
  - Disruption to public transport services and shuttle operations during construction and peak operational periods

Operation

- HGV road movements
  - Potential congestion and safety risks at intersections not designed for high-volume freight traffic
- Passenger movements
  - Increased passenger vehicle traffic
  - Greater demand for drop-off/pick-up zones and short-term parking, especially during peak travel periods
  - Pressure on local roads from parking related to the pickup and drop off from passengers
- Pressure on public transport services and shuttle operations, requiring capacity upgrades and improved scheduling
- Nuisance
  - Air quality and noise impacts from increased traffic volumes

12.5 Assessment of effects

12.5.1 The effects of the Project activities during both the construction and the operational phases are discussed in this section. It should be noted that, as traffic count data defining the baseline conditions, except the entrance gate traffic count, as well as traffic modelling for the construction and operational phases are not available, the assessment of impacts relies on the baseline data provided by ALA and the estimations made by expert judgement.

Construction phase effects

Increased traffic due to construction activities

12.5.2 There are a number of construction activities that could potentially impact the traffic conditions within and in the vicinity of the Project. The construction activities and the associated traffic generation levels are reviewed in the following section.

12.5.3 Construction access will be controlled through designated gates and construction vehicles are anticipated to utilise the internal access road situated in the boundaries of airport, avoiding residential streets where possible to minimise impacts on local communities. Nevertheless, neighbourhoods such as Amresek, Guldala, and Panfilovo, which are situated near key airport gates and access routes, may still experience increased traffic pressure during peak construction periods. These areas are particularly sensitive due to their proximity to the airport and existing congestion patterns and will require close monitoring and mitigation planning throughout the construction phase.

12.5.4 A variety of construction materials will be delivered to the site or taken from the site during the construction period, including:

- Excavated materials being transported within the site
- Materials for construction of infrastructure including site roads, vehicle parking, and walkways
- Steel, concrete, building materials, piping and other specific equipment

12.5.5 In addition, construction workers of one of the EPCs (YDA) are anticipated to be accommodated within an accommodation camp approximately 10km from the airport. Construction workers will travel to site via shared minibuses or public transport. Welfare facilities will be provided on site. No additional detailed information is expected from the remaining EPC contractors during the preparation of this ESIA. Consequently, data gaps – particularly in construction-related traffic volumes – have been identified. EPC contractors will be required to integrate actions to address these gaps into their respective Traffic Management Plans (TMPs), including the traffic estimates of construction staff, mitigation measures, and coordination with local authorities to minimise impacts on surrounding communities.

12.5.6 As reported by ALA, local suppliers and products are planned to be used for concrete supply, reinforcement steel, structural steel, etc. and to the extent possible for the other architectural, electrical, and mechanical installations.

12.5.7 The sourcing of construction materials for the Project involves a combination of local and long-distance suppliers. While some materials are produced on-site or within close proximity, others must be transported from locations hundreds or even thousands of kilometres away. The Project's location can act as a traffic bottleneck, especially where access roads converge near terminal gates. This effect tends to dissipate with distance, meaning that the magnitude of traffic-related impacts is highest closest to the airport.

12.5.8 Several key materials, such as natural aggregate and dowel bars, are sourced from within 20–50km of the project site. These include quarries and suppliers located in the Almaty Region and the city of Almaty itself. The short haul distances reduce the risk of prolonged traffic congestion and allow for more flexible delivery scheduling. However, even these local routes may experience increased traffic pressure, particularly along arterial roads such as Zakarpatskaya and Ogaryov Streets, which are already identified as subject to traffic congestion.

12.5.9 In contrast, materials such as cement and bitumen are sourced from much greater distances. Cement suppliers in Shymkent and Semey are located 699km and 1,122km away, respectively, while bitumen suppliers in Pavlodar and Atyrau are as far as 1,542km and 2,953km from the

site. The transport of these materials will require sustained use of national highways and regional roads, increasing the volume of heavy vehicle traffic over long durations. This raises concerns about road wear, accident risk, and emissions, particularly through populated or environmentally sensitive areas.

12.5.10 Overall, while the proximity of some suppliers supports efficient and low-impact logistics, the inclusion of distant sources for critical materials necessitates a robust traffic management strategy. This should include route planning, delivery time restrictions, vehicle maintenance protocols, and community engagement to minimise the environmental and social impacts of construction-related transport.

12.5.11 The construction traffic outside the Airport area will be mainly due to bulk supply trucks, which will create traffic movements within the first half of the construction programme, within which the movement will progressively increase. At the end of the first half, the construction related traffic is anticipated to start diminishing. Although the exact numbers are not available at this stage, considering the temporary and limited nature of planned construction traffic outside the airport boundary, the magnitude of additional movements is considered as **moderate**. Construction vehicles will travel within the speed limits and adhere to the traffic rules. The sensitivity of the local traffic is considered to be **medium**. Applying the significance criteria concludes the effect of construction movements associated with the Project on the capacity of the local road network around the Project is **moderate adverse (significant)**.

Quality of the roads

12.5.12 With respect to the physical effects of construction traffic, it is considered that trucks will have an impact of **moderate** magnitude on the local road infrastructure. Note that this assessment assumes that construction-related HGVs will primarily use designated and appropriate roads that are capable of accommodating such loads. The sensitivity of the local road network to truck movements is considered to be **medium** due to poor quality[8]. The use of HGVs on the road network has a potential to contribute to deterioration of the roads. However, overall, the effect of construction traffic on the quality of the roads is therefore assessed to be **moderate adverse (significant).**

12.5.13 If less suitable roads are used, the magnitude of impact could be higher, and additional mitigation measures may be necessary. This highlights the importance of route planning and enforcement within the TMP to minimise adverse effects and ensure road safety.

Road safety

12.5.14 The exact number of additional vehicles during the construction phase is not known. However, as a substantial amount of these vehicles will be HGVs, the magnitude of the impact of the increase in numbers related to road safety is assessed as being **major**. The sensitivity of receptors (i.e., mainly the other road users) along the proposed construction transport routes, which will be mainly the isolated highway and major roads, is considered to be **medium** as it is not expected to have users such as pedestrians. The effect of construction traffic on road safety is therefore assessed to be **major adverse (significant).**

Nuisance

12.5.15 The additional HGV road movements as a result of construction activities and operation of plant and heavy machinery have the potential to have a **moderate** impact on sensitive receptors. However, as discussed above, the main traffic movements outside the Project site will be mainly

[8] Road conditions have been assessed through Google Street View images dated March 2023.

through highway and major roads, therefore the sensitivity is identified as **medium**. On this basis, the effect is considered to be **moderate adverse (significant).**

Operational phase effects

HGV road movements and road safety

12.5.16 Additional traffic load on the existing road network during the operational phase is anticipated to be lower than those associated with construction of the Project in terms of construction vehicles, such as trucks, as well as vehicles for the supply of materials and goods. Following the completion of the Project, regular truck movements to and from the Airport will be limited to the weekly collection of various solid wastes and delivery of materials. In addition, occasional deliveries of materials will be made for maintenance purposes.

12.5.17 As part of the Project, additional capacity for passengers and cargo will be created. As such, the volume of waste from the catering and hospitality of workers and passengers, packaging waste, and waste generated from maintenance and cleaning will be increased.

12.5.18 The additional movements created by the freight and waste transportation, as set out in paragraph 12.3.12 could have an impact on traffic and congestion including:

- Impacts related to any improper management of internal traffic flow (i.e. circulation routes for pedestrian, visitors/personnel cars/shuttles, logistics)
- Impacts related to traffic load increases on local roads
- Impacts related to increased risk of traffic-related accidents or injuries on the transportation route

12.5.19 Rise in vehicle activity may elevate the risk of traffic-related accidents or injuries along transportation routes, particularly if road safety measures are not adequately implemented. Therefore, careful planning and monitoring of traffic patterns, along with the integration of road safety protocols, will be essential to mitigate these risks during the operational phase.

Passenger movements

12.5.20 Operational traffic will be mostly due to passenger movements including the use of private cars, shuttle buses and taxis. As the airport is an operational airport, the types of vehicles are not expected to vary with the completion of the Project. During the site visit, it was noted that passenger traffic at ALA nearly doubled between 2021 and 2024. This sharp increase reflects a strong upward trend in airport usage, which is expected to continue in the coming decades. Considering the forecasts for the increase in the passenger numbers in the following years, the traffic volumes are expected to increase. Table 12.2 shows assumed traffic volumes relating to the Project's operation.

Table 12.2: Assumed traffic data for 2030, 2040, and 2050

Year	Projected Passengers (millions)	Annual ATMs (avg)	Mailin Street total (veh/day) – indicative
2030	16	109,710 (228 daily)	52,000
2040	22.3	149,023 (301 daily)	58,500
2050	28	188,425 (516 daily)	65,000

12.5.21 Since the design of the Project is taking into consideration the expected increase in passenger numbers in particular during the design of car park areas, the overall effect of operational traffic inside the airport is expected to be **insignificant** in terms of the capacity of the internal road network and parking spaces. However, the surrounding road network—particularly in neighbourhoods such as Amresek, Guldala, and Panfilovo—is already experiencing congestion.

In the absence of mitigation measures such as improvements to local road capacity and public transport infrastructure, the magnitude of impact of additional traffic movements (including both truck and passenger vehicles) is considered to be **high**. Given the **medium to high** sensitivity of the affected areas, the resulting effect is assessed as **major adverse** (significant).

12.6 Mitigation

Construction phase

12.6.1 A range of measures are proposed to mitigate the adverse effects of traffic movements associated with construction of the Project, including both physical and management measures. The following specific mitigation measures will be applied during the construction phase of the Project.

12.6.2 General traffic management for increased traffic and quality of roads:

- A construction TMP will be developed by the EPC Contractor. The plan will cover a detailed set of control and mitigation measures. With the mitigation measures proposed in this chapter, the traffic management will be enhanced.
- The TMP provides a guide for the type of measures needed to mitigate the impact of construction traffic movements on the local road and highway network and on the local communities as well as to enhance the efficient transport of supplies and materials to the Project site, while minimising congestion and disruption.
- The TMP will also outline procedures for managing suppliers and delivery drivers arriving at the site, including advance notification requirements. All suppliers will be informed of the site's safety requirements, in particular those related to airside operations, prior to arrival. This will ensure that only vehicles and personnel meeting the necessary safety standards are granted access to the project site.
- The Contractor will comply with the national regulations and ensure that the construction site is properly secured, and construction related traffic regulated.
- Complaint venues including phone numbers will be placed on the back of all trucks and construction vehicles of the EPC Contractor and sub-contractors.
- The TMP will include the grievance procedure on speeding and other construction traffic related risks to communities.
- Traffic and transport management will be carefully planned and performed considering potential developments in the vicinity of the Project. Hence, the likely congestion and traffic accidents should be prevented (peak and off-peak hours).
- All vehicles will enter and exit the Project site in a forward direction. Vehicle manoeuvring will not be allowed on public roads.
- Earth material haulage will be restricted during peak traffic periods to minimise congestion.

12.6.3 Road safety:

- The TMP will define sensitive receptors, such as schools, on the access routes to the airport. Relevant mitigation measures including regular consultation with school administration, training of drivers with respect to the needs of the sensitive receptors will be identified in the TMP.
- Due attention will be paid to rush hour extremes and evolving traffic conditions when planning traffic management interventions.
- Good site visibility will be ensured in order not to allow drivers' lines of sight to be obstructed by structures.

- Disruption to road users will be minimised as far as possible by utilising the designated areas for the storage of materials and by providing onsite parking to reduce congestion on the road during materials delivery.
- Ongoing consultations will be undertaken with stakeholders (especially with neighbouring facilities and district representatives) to inform them about the construction program and transportation routes.

12.6.4 Nuisance:

- Dust suppression techniques on unpaved roads will be implemented such as applying water or non-toxic chemicals to minimise dust from vehicle movements. Where water is used for dust suppression, processes require an adequate supply of water.
- Air quality and noise related mitigation measures are outlined in **ESIA Chapter 5: Air quality** and **ESIA Chapter 11: Noise.**

12.6.5 Traffic impacts during construction will peak between 2026 and 2027, when Phase 1 and Phase 2 activities overlap. These phases include major works such as the full depth reconstruction of the runway, taxiway construction, and apron upgrades, which will generate the highest volume of HGV movements and worker transport. To manage this, TMP will include strict controls on delivery schedules, designated routes, and time windows to avoid peak commuter periods. Coordination with local authorities will be essential to prevent congestion on Mailin Street and surrounding residential areas.

12.6.6 The TMP will incorporate all mitigation measures outlined in this chapter. In addition, the TMP will specify the roles and responsibilities of designated personnel tasked with implementing and monitoring the plan. Key Performance Indicators (KPIs) will be assigned to these individuals to ensure accountability and to track the effectiveness of traffic control measures throughout the construction phase. This approach will support proactive traffic management and ensure that the TMP remains responsive to evolving site conditions and community concerns.

Operational phase

12.6.7 The following mitigation measures will be applied during the operational phase of the Project.

12.6.8 General traffic management for increased traffic due to HGV and passenger movements:

- A TMP will be developed for the operational phase outlining safety measures for traffic management including vehicle operations, use of access roads, vehicle and pedestrian routes, and use of parking facilities. KPIs will be assigned to these individuals to ensure accountability and to track the effectiveness of traffic control measures throughout the operational phase. This approach will support proactive traffic management and ensure that the TMP remains responsive to evolving site conditions and community concerns.
- The TMP will guide the measures needed to mitigate the impact of construction traffic on the local road and highway network and surrounding communities, while facilitating the efficient transport of supplies and materials to the Project site and minimizing disruption. It will also outline procedures for managing suppliers and delivery drivers, including advance notification protocols to ensure compliance with site-specific safety requirements, especially those related to airside operations.
- It will be ensured by ALA that traffic and transport procedures within the airport follow the applicable national and international standards and guidelines.
- The responsible personnel for emergency related actions at ALA will be furnished and trained to respond to traffic related emergencies. Traffic related emergencies will be part of the emergency response plan.
- As currently no information is available on the capacity of the airport shuttle buses, it is important that communication with the relevant authority is held by ALA to discuss and align

with necessary future upgrades of shuttle bus services to satisfy the demand as a result of airport expansion and related passenger increase.

- Monitoring of airport traffic increases and impacts on the local road network will be undertaken. ALA will prepare a monitoring plan which will identify access roads on which traffic counts will be periodically undertaken to better understand future impacts from capacity increases.
- Bus and shuttle services will be expanded in line with forecast passenger growth, ensuring sufficient capacity during peak flight banks. Special attention will be required for night-time operations after 2027, when the easing of Russian airspace restrictions is expected to re-cluster night arrivals, potentially increasing demand for late-night ground transport.
- Lower speed limits and traffic control measures will be applied within the Project.
- The airport will introduce dynamic pricing for short-stay parking, require pre-booking during peak periods, and implement time windows for commercial vehicles to reduce congestion at terminal access points.
- The airport will collaborate with city authorities and digital map providers to de-prioritize residential shortcuts (such as routes through Almerek and Guldala) in navigation apps and introduce local traffic filters to protect communities from airport-related through-traffic.
- A safe working environment for drivers and the transportation of ALA staff as well as staff of its service providers commuting to the airport and the supply of necessary Personal Protective Equipment (PPE) will be ensured.
- Necessary communication and collaboration with local/governmental authority, non-governmental organisations (NGOs), neighbouring facilities and commercial organisations regarding traffic and transport management will be undertaken.
- While a Surface Access Strategy is not a legal requirement in Kazakhstan, nor a strict condition imposed by lenders, it is increasingly recognized as international good practice. Based on Project Horizon’s growth estimates, such a strategy is recommended to help inform more effective mitigation measures, improve connectivity, and support long-term sustainability planning.
- These measures, combined with the planned metro connection and improvements to the regional road network, as well as the recommended Surface Access Strategy, will help mitigate congestion risks and ensure safe, efficient access to the airport as traffic volumes increase.

12.7 Summary of residual effects

12.7.1 Residual effects after the application of mitigation are presented in Table 12.3.

Table 12.3: Summary of residual effects for traffic and transport

Description of effect	Permanent or temporary	Sensitivity of receptor	Magnitude of impact	Significance of effect before additional mitigation	Additional mitigation	Residual effect	Proposed monitoring
Construction phase							
Increased traffic due to construction activities	Temporary	Medium	Moderate	Moderate adverse (Significant)	EPCs to prepare Construction TMP	Negligible (Not significant)	Ongoing consultations with stakeholders to monitor or address any complaints related with traffic and transport
Quality of the roads	Permanent	Medium	Moderate	Moderate adverse (Significant)	EPCs to prepare Construction TMP	Negligible (Not significant)	ALA to monitor EPCs performance via well-defined KPIs in the EPCs' construction TMP.
Road safety	Temporary	Medium	Major	Major adverse (Significant)	EPCs to prepare Construction TMP	Minor adverse (Not significant)	
Nuisance	Temporary	Medium	Moderate	Moderate adverse (Significant)	EPCs to prepare Construction TMP	Negligible (Not significant)	
Operational phase							
HGV and Passenger Movements	Permanent	Medium	Major	Major adverse (Significant)	ALA to prepare operational TMP. A Surface Access Strategy (SAS) is recommended based on Project Horizon's growth estimates to inform more effective mitigation measures, improve connectivity, and support long-term sustainability planning.	Minor adverse (Not significant)	Monitoring of airport traffic increases and impacts on local road network. Periodic review of access modes and connectivity options to support future updates to the SAS.