

Analysing and managing risks and challenges



Société du Grand Paris, through its Risk, Audit, Ethics and Compliance Division and Project Risk and Cost Management Division, designs and implements structured approaches to risk management and internal auditing throughout the agency and the Grand Paris Express project. It periodically and independently assesses whether all activities and investments are properly controlled. This system is part of its corporate social responsibility policy and addresses line of business and strategic issues brought to light by internal and external stakeholders. Société du Grand Paris uses this system to roll out its CSR roadmap successfully and achieve its performance objectives.

Grand Paris Express's geographical scope and leading role in the economic, social and urban development of the Paris metropolitan area exposes the entire project to a wide range of potential risks.

Some of the risks directly relate to managing the project, which is one of the responsibilities of Société du Grand Paris. Others are partially or completely outside the control of Société du Grand Paris, such as those that relate to changes in the national economic climate or to the convergence of public policies concerning spatial planning. The degree of risk control and the nature of preventive measures therefore depend substantially on the risk category.



This system is part of Société du Grand Paris's environmental and corporate social responsibility

As part of its comprehensive approach to operations management, risk management and internal auditing activities have two main objectives:

- support the management board and line management team in running the project and decision-making, particularly by providing tools for risk assessment and mitigation;
- regularly provide the governance bodies of Grand Paris Express and its stakeholders with reasonable assurances that operations are properly controlled and, beyond that, that the project is sound from the financial, legal and technical perspectives.

The systematic and integrated risk management and internal auditing system aligns with:

- the highest international professional standards;
- the strategic priorities of the management board and governance bodies of Société du Grand Paris;

- stakeholder requirements (regulatory bodies, inspectors, external auditors, investors, regional authorities etc.).

The general risk control system is overseen by the Supervisory Board of Société du Grand Paris and its Audit Committee, which provides the foundation of Grand Paris Express's control activities. All stakeholders contribute to this as part of the programme management and the project execution process.

Key risk factors

There are two key risk categories, each of which can affect the other:

- immediate risks associated with infrastructure construction (stations, tunnels and ancillary works), development of systems and preparation for commissioning;
- risks to the future operation of the metro.

RISKS TO PROJECT MANAGEMENT

During the construction phase, complex projects like Grand Paris Express have many management and control challenges: a large-scale programme faced with construction hazards, a complex industrial layout involving multiple stakeholders (contractors, engineers, architects, programme management assistance), an ambitious schedule, many cost items to manage and optimise, and technical and safety issues to control.

After the design phase, operational execution, which is the current stage of the project, requires activities to be monitored in an even more integrated way and control mechanisms to be strengthened across all areas, including costs, contracts, deadlines, safety and quality, as well as the social and environmental impacts of the project.

Risk mapping thus distinguishes six major families of implementation risks, each of which requires different risk treatment methods.

- Risks related to local community relations: loss of political support and shortcomings in partnerships, lack of local acceptance of projects etc.
- Internal programme management risks: fraud, corruption, conflicts of interest, failure in crisis management, functional disorganisation and inadequacy of the management culture at various project stages, talent pool and retention, lack of IT security etc.
- Financial risks: financial sustainability, disorganisation of the expenditure chain, lack of cost management etc.
- Non-financial risks: worksite safety, psychosocial risks, environmental impacts and nuisances, waste management and sources of materials used, greenhouse gas emissions, consequences of climate change and extreme weather events etc.
- Contractual risks: unfavourable competitive conditions, procurement risks,

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- contractual performance, difficulties related to management of the quality of services etc.
- Risks related to studies and works: difficulties in managing deadlines, uncertain specifications, interface problems, failure to obtain regulatory authorisations, land acquisition problems, risks related to preparatory work, underground works, neighbours, integration of systems, commissioning, maintenance etc.

RISKS TO FUTURE OPERATING CONDITIONS AND THE FINAL IMPACT OF THE PROJECT

Société du Grand Paris will not be the operator of Grand Paris Express. However, it is responsible for handing over operations and maintenance.

There are two types of risks that may affect future operating conditions:

- systemic risks, which directly relate to economic growth. For instance, these risks relate to future changes in economic growth, financial conditions, interest rate risk, demographic changes etc. In assessing the socioeconomic profitability of the project, these risks are specifically addressed by the method of analysis recommended by the French General Secretariat for Investment (SGPI) for analysing the health of the balance sheet;

- non-systemic risks, which do not relate to economic growth. These risks threaten the benefits of the project (revenues, non-monetary benefits etc.), future use of Grand Paris Express and the resilience of the network against changes in the frequency and intensity of climatic events, particularly the most extreme (heatwaves and floods) that could affect the longevity of the infrastructure, quality of service or safety of users.

Faced with these risks, Société du Grand Paris has chosen two levels of analysis to characterise the attractiveness of the project:

- Project opportunity: the benefits associated with the socioeconomic assessment depend directly on the forecast passenger traffic on the various lines and the wider economic effects, which are linked to the role of the transport network as an “engine of growth”;
- project design: traffic forecasts are the determining factor in the sizing of structures, systems and the capacity of rolling stock. Climate risks have been included in the design and construction of the structures and are

controlled using the most pessimistic forecasts [100-year flood level or historical data (8.10 m for Paris) and the IPCC RCP8.5 scenario (+3.2 to 5.4°C in 2100 in Île-de-France)].

From the outset of the project, Société du Grand Paris has conducted several studies aimed at solidifying the sociodemographic growth assumptions used to qualify and quantify the benefit of the project through the use of land use transport interaction (LUTI) models. This resulted in an assessment of the range of benefits associated with the possible impact of the completion of the infrastructure on national and European growth.

To reduce the risk of oversizing or undersizing systems and structures, Société du Grand Paris compared the data produced by several traffic modelling tools, particularly the models used by the Regional and Interdepartmental Directorate of Environment, Planning and Transport (DRIEAT), RATP and Île-de-France Mobilités (IDFM).

A risk management system designed to support the management of Grand Paris Express

The organisation and handling of risk management provide decision-making bodies with forward-looking views of the main challenges in running the project during the construction phase and their impacts on stakeholders and the environment.

RISK MANAGEMENT FRAMEWORK AND RESOURCES

The organisation of risk management is basically governed by the French Public Procurement Code (CCP). It defines the respective roles and responsibilities of the co-contractors in the construction of public works.

Société du Grand Paris understands the added value of robust project control and the responsibilities of programme managers in planning and predicting pitfalls of all kinds, so it sought to strengthen this framework by drawing on regulations and recognised standards concerning risk management in urban civil engineering works.

Société du Grand Paris has also developed its own risk management plan, which is regularly updated. It defines how risk management is organised and formalises the roles of all the stakeholders involved in risk control. It also specifies the methods and tools used for consistent, high-level treatment of all the risks facing the project and institution.

It is available to developers and contractors through contractual documentation and specifies the roles of second opinions and technical controls at the engineering level (internal and external controls, approval management), health and safety coordinators (CSPSs) and construction companies. The approach is consistent across all the entities of Société du Grand Paris and involves all the project stakeholders.

Given the evolving risks that programme management is exposed to and the added value of feedback (from the first lines, where work has advanced, for use in later lines), the risk management system is designed to be regularly updated.

Risk management for Grand Paris Express uses the following resources:

- a network of about 15 professional risk managers (distributed between the central division responsible for overall coordination and the project or business departments: infrastructure, systems, planning, contracts etc.);
- about 50 risk advisors within the programme management assistance teams, project management teams and contractors working on the various line sections.

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Société du Grand Paris has developed its own risk management plan that formalises the roles of all stakeholders

These resources, coupled with a partly decentralised organisation, enables risk managers to keep an eye on operations and provide substantive project management support.

Société du Grand Paris includes the “risk” dimension in all the components of the programme and its activities as a pivotal force driving performance and informed decision-making. The risk management function thus links to:

- Internal control and audit functions (monitoring of joint action plans and the self-sustaining approaches between them and with the CSR roadmap);
- Financial processes, particularly budget planning, and estimates of the costs at the completion of projects (the latter being based on a portfolio of 2,000 risks managed by the programme manager and formalised using a common methodology within its dedicated information system);
- Management of schedules through critical path analyses;
- Contract and change management;
- CSR roadmap;
- All the other support departments of the institution through support for the generation of business risk maps and during update of the global risk map of Société du Grand Paris.

IDENTIFICATION, ASSESSMENT AND TREATMENT OF RISKS

The identification of risks in the construction phase is based on various methods of assessing their fundamentals: establishment of scenarios, review of history, use of incident databases, analysis of field reports, use of expert assessments and second opinions, benchmarking and brainstorming. The risks identified are all assessed using standardised scales for likelihood (levels 1 to 4) and severity (multicriteria levels 1 to 4: costs, deadlines, safety, legal, image, operations) then converted into criticality (likelihood x severity).

		GRAVITÉ			
PROBABILITÉ	4	4	8	12	16
	3	3	6	9	12
	2	2	4	6	8
	1	1	2	3	4

Matrice de criticité des risques

Les pointillés désignent la zone de risque pour laquelle un reporting au directoire doit impérativement être effectué.

NIVEAU	QUALIFICATION
Majeur	<p>Impose la mise en œuvre prioritaire de plans d'actions préventifs.</p> <p>Nécessite la définition de plans d'actions correctifs opérationnels.</p>
Fort	<p>Nécessite la définition opérationnelle de plans d'actions préventifs et correctifs.</p> <p>Organisation d'arbitrages pour la mise en œuvre de plans d'actions préventifs.</p>
Moyen	La définition de plans d'actions est à statuer par le responsable du risque.
Faible	Le risque est suivi

Échelle d'appétence au risque de la Société du Grand Paris

Les risques majeurs doivent être mis sous contrôle. En suivant des critères d'escalade, ils font l'objet d'un reporting au directoire, précisant les modalités de maîtrise et le niveau de risque résiduel atteint ou à défaut ciblé, ainsi que les échéances prévisionnelles d'aboutissement des plans d'action.

The major risks have criticalities 9 to 16 or severity 4, which is the practical expression of the company's risk appetite.

In accordance with the principle of subsidiarity, every risk is identified, analysed, assessed (prioritised) and treated at the appropriate operational level. The risk registers are populated by the technical risk registers established contractually by the project managers and the contractors or developer groups, reviewed and challenged by programme management, and by the direct contributions from programme managers or programme management assistants.

Every risk is managed by a risk owner who is responsible for monitoring treatment plans, monitoring changes in the risk and reporting. The risk owner leads the action owners responsible for implementing control plans. Systematic risk monitoring is performed periodically by each line as part of dedicated risk reviews.

Société du Grand Paris updates its high-level risk map annually. Risk monitoring by line project is coordinated with cross-functional risk monitoring by sector (civil engineering analysis, all trades, systems, stations etc.) in harmony with the internal organisation. This ensures consistency across all the risks identified and listed in the operational registers of the Grand Paris Express lines, as well as the conclusions of internal audits, the conclusions of identification, analysis, assessment and external risk treatment audits, internal control activities and generally any document likely to provide

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information on the project's risk profile. Each risk is assigned a risk owner at the executive level in accordance with the same principles followed for operations.

Internal auditing provides Société du Grand Paris and its governance bodies with reasonable assurance regarding control of its activities.

OBJECTIVES AND GUARANTEES OF INTERNAL AUDITING

The international benchmark definition states that internal auditing is “an independent, objective assurance and consulting activity designed to add value and improve an organisation’s operations.

It helps an organisation accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes”.

Internal auditing was set up in 2017 at Société du Grand Paris to prevent, through targeted analyses and recommendations, the key risks that Grand Paris Express is likely to face.

The process is framed by the internal auditing charter, adopted on 22 March 2017 by resolution of the management board. The charter defines the mission, role and responsibilities of internal auditing,

as well as the responsibilities of the departments involved in the process. It discusses the role of the Audit Committee of Société du Grand Paris, established by resolution of the supervisory board on 28 November 2018.

This internal auditing charter is based on professional standards and the internal auditing code of ethics developed by the Institute of Internal Auditors and disseminated in France by the French Institute of Auditing and Internal Control (IFACI). These form the reference framework called the International Professional Practices Framework (IPPF). Lastly, to ensure that internal auditing takes place as independently as possible, as recommended by IPPF standard 1110, the director of internal auditing, control and ethics reports to the management board.

66 Ensuring that internal auditing takes place as independently as possible.



Internal auditing contributes to improving the agency's processes, organisational structure and relationships it maintains with its service providers and partners.

AUDIT AND CONSULTING ASSIGNMENTS AND THEIR CONTRIBUTIONS TO MANAGING THE COMMITTEE SYSTEM

Internal audit assignments concern both programme management and service providers (programme management assistants, project managers, contractors etc.) of Société du Grand Paris.

In accordance with the principles of integrity and objectivity, internal auditing:

- checks the effectiveness of the organisation and internal processes, management of Grand Paris Express activities, including the performance of the construction chain, as well as the application of the principles of economic effectiveness and efficiency, for the key risks;
- checks the compliance of the activities of Société du Grand Paris with current regulations and the applicable general legal framework;
- checks the existence and relevance of internal control and its appropriateness for the intended purposes;

- checks the effective implementation of decisions of the managing bodies, directives from the management board, contractual obligations and commitments;
- recommends improvements in the above-mentioned areas and assesses their implementation.

An annual internal audit plan, consistent with the latest risk analyses, sets out the work programme validated by the Société du Grand Paris management board and approved by the Audit Committee.

It comprises between five and ten assignments per year. In addition, depending on the degree of urgency, additional assignments may be made to meet the specific needs of the management board and the executive committee. Lastly, the risk and internal auditing department may also conduct consulting assignments at the request of the management board or any part of Société du Grand Paris with approval from the management board.

These assignments are coordinated with:

- technical inspections conducted by other departments of Société du Grand Paris, particularly in terms of worksite safety and environmental issues;
- second opinions and expert assessments conducted by the various trades of Société du Grand Paris;
- external audits.

It also interfaces with ministerial inspection services and the French Court of Auditors.

Internal auditing thus contributes to improving the agency's processes, organisational structure and relationships it maintains with its service providers and partners.

As a result, it plays a role in developing the operational excellence approach implemented within Société du Grand Paris.

IMPLEMENTATION OF THE PROVISIONS OF THE FRENCH SAPIN II ACT ON ANTI- CORRUPTION

Since January 2020, Société du Grand Paris has been subject to the provisions of the French Transparency, Anti-Corruption and Economic Modernisation Act of 9 December 2016, known as the “Sapin II” act.

In 2019, it set out to determine an anti-corruption strategy that meets the provisions of the act, with the support of the French Anti-Corruption Agency (AFA).

Société du Grand Paris developed a map of corruption risks and set up an anti-corruption steering committee.

An internal reporting procedure was defined, as well as a methodology for evaluating third parties.

Employees are made aware of anti-corruption issues through training sessions and the prevention of the risk of conflicts of interest through the development of dedicated tools.

THE CHALLENGES OF INTERNAL AUDITING IN A DYNAMIC PROJECT STRUCTURE

Within a constantly changing project structure, internal auditing must balance its ability to adapt with ensuring strict application of the principles governing the performance of its missions. Particular attention is paid to the follow-up and implementation of audit recommendations to ensure that internal auditing is an effective part of project control, the continuous improvement process and reporting to executive governance bodies.

““ The internal auditing system is regularly reviewed to access progress.

Because of this requirement for results, the internal auditing system is regularly reviewed to access progress in implementing audit recommendations. The reviews are submitted to the management board and Audit Committee.

Since its launch, the internal auditing activity has been an important driver of the transformation of Société du Grand Paris. By allowing the regular sharing of in-depth and objective analyses of the main strengths and weaknesses of project management, it has also become a recognised partner in project governance.

Issue 1	<p>Safety of Grand Paris Express structures Consideration and management of security and safety risks that may arise during the construction phase and then the operation of Grand Paris Express structures (concerning malicious actions by third parties, including cybersecurity).</p>		
Risks	<p style="text-align: center;">Worksite security Cybersecurity for Grand Paris Express systems IT security for Société du Grand Paris</p>		
	<p>The risk relates to the potential failure of the systems that ensure perimeter security and protective measures for Grand Paris Express worksites. This type of failure could be caused by any external or malicious intrusion (theft, damage, sabotage). The risk also relates to the possibility of inadequate safety on worksites. Regarding safety, accidents may involve personal injury or property damage that could lead to a worksite shutdown or significant delay in the progress of the works.</p>	<p>Because it is managing critical information systems (SIIV), Société du Grand Paris must be able to manage the challenges and control the level of security set out in the French Military Planning Law (LPM), which aims to strengthen the security of operational information systems. The risk covers effective control of the entire cybersecurity framework compliance process:</p> <ul style="list-style-type: none"> - determination of the guidelines applicable to all systems deployed as part of Grand Paris Express; - application of cybersecurity requirements to the systems; - ensuring consistency with the documentation of Grand Paris Express; <p>- roll-out and inclusion of approved rules in Grand Paris Express systems. This risk is accentuated by the general context affecting the interests of the French government, such as the Grand Paris Express.</p>	<p>This is the risk that the confidentiality, integrity and availability of the data in Société du Grand Paris's information systems are compromised, making it impossible to continue the project in the long run. Exposure to this risk increases for all contractors, especially at times when it is necessary to work remotely. The causes can be technical (e.g. system sizing), material (e.g. server failures) or human (e.g. errors in migrations or version upgrades, or possible modelling defects in tools for geographic or spatial representation of information). The risk also includes malicious acts (intrusion into the programme manager's information systems), which constitute human rights violations, invasion of privacy and the right to the protection of personal data.</p>
Action plan	<p>Strengthening of risk management and organisational systems</p> <ul style="list-style-type: none"> - Implementation of a worksite safety auditing contracts - Safety and security charter for works - Clarification of the organisation and responsibilities in the chain for monitoring and processing liability to third parties - Strengthening of the presence of programme management on the worksites through the recruitment of safety officers <p>Implementation of measures to cover the risk</p> <ul style="list-style-type: none"> - Insurance cover for liability 	<p>Strengthening of the existing risk management systems</p> <ul style="list-style-type: none"> - Committee for the alignment of the security policies for Société du Grand Paris information systems - Cybersecurity programme management assistant for the preparation of compliance with the Military Planning Law - Security policy for Grand Paris Express information systems - Establishment of a tripartite cybersecurity working group with Île-de-France Mobilités and RATP-GI (infrastructure manager) - Assistance from the French National Agency for the Security of Information Systems 	<p>Overhaul of the scope</p> <ul style="list-style-type: none"> - Compliance of Société du Grand Paris with the provisions of the EU General Data Protection Regulation - Awareness/internal communication (phishing tests, communication campaign on information systems security rules) - Outsourcing to data centres - Information systems security manager (ISSM) assigned to the information systems department, as well as an operations manager for daily monitoring - Strengthening of legal assistance for protection in case of attack <p>Strengthening of existing measures</p> <ul style="list-style-type: none"> - Information security charter and information systems security policy - IT disaster recovery plan and crisis management processes - Implementation of the recommendations of the cybersecurity mission

Issue 2	Sustainable mobility and accessibility Ensure equal physical access to transport infrastructure and improve access to isolated areas. Contribute to the transformation of mobility towards more sustainability: active mobility and multimodality.	
Risks	Political and partner support Station development works	
	<p>The risk involves the loss of support from stakeholders outside Grand Paris Express, particularly political and administrative support, both local and national.</p> <p>The risk includes an aspect related to the loss of reputation or influence, as well as loss of endorsement of the project by economic stakeholders. It includes the need to tailor the management of stakeholder relations to the progress of the Grand Paris Express construction programme.</p> <p>The 2021 regional and departmental elections and 2022 presidential elections emphasised the need for Société du Grand Paris to communicate in a coordinated way with local elected officials and residents.</p>	<p>These are the technical risks associated with works for the development of stations and integrated facilities. This risk concerns non-compliance with the programme defined by Société du Grand Paris, resulting in a delayed opening or, in the most serious case, failure to obtain the necessary permits to open and operate a station, receive the public or open shops, resulting in inadequate incentives to ensure the use of low-carbon transport modes in place of cars.</p>
Action plan	<p>Ongoing committee system close to the field</p> <ul style="list-style-type: none"> - Coordination meetings with the principal private secretaries and the communication departments of transport operators - Strategic planning committee meeting - Online conference with local elected officials and members of parliament - Establishment works monitoring committees - Quarterly works monitoring committee with local stakeholders - Neighbourhood public meetings 	<ul style="list-style-type: none"> - Publication of the <i>Places du Grand Paris</i> planning and design guide - Workshops with local authorities based on the <i>Places du Grand Paris</i> planning and design guide - Hub studies conducted with local authorities - Signage and furniture tests performed with future users of Grand Paris Express and associations representing people with reduced mobility

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Issue 3</p>	<p>Business ethics Anti-corruption, avoidance of conflicts of interest, promotion of fair competition between business partners. Includes the EU General Data Protection Regulation.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Risks</p>	<p>Fraud Breach of integrity</p> <p>Breach of integrity risks are defined in the penal code. They include the risks of corruption, influence peddling, favouritism, unlawful taking of interest, bribery and embezzlement. The fraud risk corresponds to any intentionally dishonest act intended to deceive by contravening the law or regulations (e.g. production of false invoices, CEO fraud and forgery of official documents).</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Action plan</p>	<p>Anti-fraud measures</p> <ul style="list-style-type: none"> - Insurance management policy and whistleblowing mechanism - Implementation of new secure rooms for contract reviews by project managers - Regular audits to check that tool permissions align with confidentiality commitments - Awareness raising in stakeholders involved in the expenditure chain by the accounting services division - Actions to strengthen internal anti-fraud measures: control of delegation of signing authority, internal accounting control <p>Securing of key areas of concern regarding anti-corruption and conflicts of interest</p> <ul style="list-style-type: none"> - Awareness raising in all employees of Société du Grand Paris - Implementation of a plan to prevent conflicts of interest and corruption - Implementation of a monitoring and support plan for employees in potential or proven conflict of interest situations

Issue 4	Prevention and management of environmental impacts and nuisances Odour nuisances, noise pollution, releases into the air/water/soil, effluents etc.	
Risks	Environmental protection The risk is the degradation or pollution of a natural environment, landscape, classified area, classified wooded area, wetlands or protected species caused by Société du Grand Paris's subcontractors and worksites. It also includes non-compliance with landscape integration of worksites and structures, compensation and authorisations for land clearing, and failure to prevent noise and vibrations during works. This risk includes the implementation of an effective deterrence policy (audit, worksite environment charter, financial penalties) by Société du Grand Paris to encourage contractors to do everything possible to comply with regulations.	Project acceptance The risk consists of loss of public support for the Grand Paris Express project. It must take into account the proper sizing and coordination of the measures implemented to control it. It includes nuisances to residents caused by worksites, shops and transport users. The continuous presence of Société du Grand Paris and its service providers in the areas increases the risk. This risk has been greatly accentuated by the health crisis, forcing residents to remain at home and to endure the nuisances caused by the works.
Action plan	Strengthening of support teams – Appointment of an environment manager for every Grand Paris Express line Response to legislation – Implementation of preservation and conservation measures in sensitive areas – Establishment of an environment charter for worksites included in the contractual provisions – Strengthening of legal documents Strengthening of control systems and tools – Implementation of annual environmental audit campaigns – Traceability systems polluted and unpolluted excavated materials	Optimisation of processes and organisation – Legal security of the local resident support policy – Processing of valid damage claims within 30 days – Structuring of the resident unit within the new governance – Structuring of the employment unit to promote employment and integration in the communities covered by Grand Paris Express Measures to prevent conflicts – Holding contractors and project managers accountable through contractual clauses – Reduction of Société du Grand Paris's exposure in its communication Measures to reduce nuisances caused by worksites – Mainstreaming of the <i>Silence Chantier</i> , or silent worksite, approach (white paper describing all the solutions against the noise generated by urban construction sites and feedback made available to construction stakeholders) and the "worksite weather forecast" approach (innovative digital solution tested on one of the Line 15 Sud worksites, which aims to provide complete and transparent information on noise pollution): installation of noise barriers

Issue 5	<p>Longevity of infrastructure to meet the expectations of future passengers Designing and building a maintainable, modern infrastructure for the long term (anticipating new uses and expectations of new end users, flexibility and reversibility of spaces).</p>
Risks	<p>An evolving project that still meets the needs of Île-de-France residents despite the crises faced</p>
	<ul style="list-style-type: none"> - The risk relates to the construction of a partly obsolete project in which the facilities in the stations and trains are no longer suitable, including with respect to public health crises (reduced passenger flows, measures to protect against transmission etc.) - The number of complaints and disputes with contractors can be substantial if changes are made to the project scope - There is also the potential risk of a loss of credibility for programme management, resulting in a loss of trust in the Société du Grand Paris model
Action plan	<ul style="list-style-type: none"> - Introduce an internal whistleblower system for the risk of obsolescence - Create a cross-functional managers' unit that can address issues related to the needs of Grand Paris Express - Consolidate the social and economic assessments of the lines and develop them - Seek input from external bodies, expert committees and oversight bodies on the future needs of users - Challenge the programme management assistants in their consulting role - Provide feedback on projects that have not been able to adapt or respond to issues - Question each division on risk management and enable them to suggest adjustments to the process - Adjust crisis communication based on feedback from projects under scrutiny

Issue 6	<p>Waste management and the circular economy Mainly involves the generation and recovery of excavated material and other waste generated by the activities of Société du Grand Paris and Grand Paris Express.</p>
Risks	<p>Treatment of excavated material</p>
	<p>The key risks concerning land treatment relate mainly to:</p> <ul style="list-style-type: none"> - soil contamination exceeding initial estimates; - increase in the general tax on polluting activities (TGAP), which is revised annually in accordance with the Finance Act, whose future level beyond 2025 is unknown, with possible discrepancies between the level of TGAP used in fixed contracts and its future level; - failure in the logistics chain, which includes excavation, removal, intermediate storage and final destination, with the risk that contractors do not correctly forecast excavation rates and/or that storage space is insufficient to hold the volumes produced by the many worksites in the Île-de-France region and/or that development projects are blocked by the authorities, local residents and/or associations.
Action plan	<p>Improvement of spoil management processes and methods</p> <ul style="list-style-type: none"> - Set-up of workshops on standardising the treatment of spoil risks in the risk registers, under its various components - Discussions on strategies for purchasing and contracting land (challenging the treatment of spoil, extraction, possibility of working with contractors for its treatment) - Discussions and feedback on the characterisation, grading and recycling of spoil - Contractual arrangements for the price of spoil on a flat-rate basis (in design-build) <p>Strengthening the external control framework</p> <ul style="list-style-type: none"> - Extend the use of external controls to be activated at the request of the contract manager to reduce the risk of mixing (performing cross-checks on spoil going to its final destination)

Issue 7	<p>Cutting greenhouse gas emissions Aims to confront climate change. Reduce energy consumption and greenhouse gas emissions.</p>
Risks	Contribution to climate change
	<p>The risk involves failure to make the contribution to reducing greenhouse gas emissions resulting from the opening of Grand Paris Express, which may take the form of:</p> <ul style="list-style-type: none"> - an unrestrained increase in direct emissions due to the use of construction methods that are more carbon intensive; or - overestimation of indirect emissions avoided due to unrealistic assumptions about modal shifts or spatial planning.
Action plan	<ul style="list-style-type: none"> - Sobriety in the design of structures and rolling stock - Use of low-carbon concrete and fibre-reinforced concrete in tunnels - Resource conservation in the construction of stations: efficient use of space, sustainable architecture, material savings, use of low-carbon materials, durability of materials etc. - Exceed the targets of the French 2020 environmental regulation for real estate projects - HQE-certified operations centres - Use of alternatives to road transport of spoil - Support for technological innovation (incentives to contractors through the Reverse Carbone Initiative, calls for projects etc.)

Issue 8	<p>Climate change adaptation Climate change adaptation consists of the company's ability to take into account the impacts of climate change in design and building of the Grand Paris Express infrastructure, paying particular attention to the presence of flood zones and aboveground areas subject to extreme temperatures.</p>
Risks	Vulnerability and exposure to climate risks
	<p>The physical risk concerns the increased exposure of Grand Paris Express infrastructure to changes in the frequency and intensity of climate events, particularly the most extreme ones (heatwaves, droughts, floods etc.) that can jeopardise the longevity of the infrastructure (deformation of rails and catenaries, failure of electrical equipment, changes in crew and maintenance schedules etc.), service (changes in passenger habits, etc.) and the safety of users.</p> <p>It must take into account the sizing and coordination of the measures implemented to prevent or deal with these exceptional events.</p>
Action plan	<p>Response to legislation and flood control measures</p> <ul style="list-style-type: none"> - Advancement of Société du Grand Paris's flood management strategy, which sets out guidelines to be reviewed and included in the design of the Grand Paris Express infrastructure affected by flood risk - Level of protection given to structures adapted based on the type of flood, and implementation of additional protection on a case-by-case basis - Hydraulic compensation: volumes withdrawn by the project from the flood expansion field will be compensated for, cubic metre for cubic metre - Strengthening of legal documents <p>Design of operating systems</p> <ul style="list-style-type: none"> - Definition of appropriate transport systems by operational teams - Preparation with partners for operation by future transport operators <p>Strengthening resilience</p> <ul style="list-style-type: none"> - Mapping of physical climate risks within the scope of Société du Grand Paris's activities