Agence Régionale de Santé Île-de-France

ORS Île-de-France

Observatoire régional de santé Île-de-France


# HEALTH IMPACT ASSESSMENT
# OF TRANSPORT PROJECTS FOR PLAINE COMMUNE
## SUMMARY

## ILLUSTRATION

Berthet One is a cartoonist from Plaine Commune. He grew up on the Cité des 4000 estate in La Courneuve.
He won the Grand Prize of the first Transmurailles comic-strip competition in Angoulême. His first album, “L’Évasion” (“The Escape”), was published in 2010, and sold over 10,000 copies.
He has just completed his second comic strip.
In 2013, he set up the Makadam association, which aims to prevent delinquency and encourage social insertion through Art. In partnership with a range of bodies, including the French Ministry of Justice, Makadam has enabled artists – rappers, scriptwriters, illustrators, etc. – to work in a prison setting, thanks in particular to support from the M6 Foundation. Makadam also works in libraries, schools, Youth and Cultural Centres, and Community Centres.

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SUMMARY OF FINAL REPORT – MAY 2014

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# ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| **AIRPARIF** | *Association de Surveillance de la Qualité de l'Air en Île-de-France* | Île-de-France Air Quality Surveillance Association |
| **ALD** | *Affection Longue Durée* | Long-lasting condition |
| **ANAH** | *Agence Nationale de l'Habitat* | National Housing Agency |
| **ANRU** | *Agence Nationale pour la Rénovation Urbaine* | National Agency for Urban Renewal |
| **AOTU** | *Autorité Organisatrice de Transport Urbain* | Urban Transport Organising Authority |
| **APUR** | *Atelier Parisien d'Urbanisme* | Paris Urban Planning |
| **ARS** | *Agence Régionale de Santé* | Regional Health Agency |
| **BRUIT-PARIF** | *Observatoire Régional du Bruit en Île-de-France* | Île-de-France Regional Noise Observatory |
| **CDT** | *Contrat de Développement Territorial* | Local Area Development Contract |
| **CépiDC** | *Centre d'Épidémiologie sur les Causes Médicales de Décès* | Centre for Epidemiology on the Medical Causes of Death |
| **CEREMA** | *Centre d'Études et d'Expertise sur les Risques, l'Environnement, la Mobilité, et l'Aménagement* | Centre for Studies and Expert Analysis of Risks, the Environment, Mobility, and Development |
| **CERTU** | *Centre d'Études sur les Réseaux, les Transports, l'Urbanisme, et les Constructions Publiques (intégré dans le CEREMA)* | Centre for the Study of Networks, Transport, Urban Planning, and Public Building Works (incorporated into CEREMA) |
| **CLS** | *Contrat Local de Santé* | Local Health Contract |
| **CMU** | *Couverture Maladie Universelle* | Universal Health Cover |
| **CMU-C** | *Couverture Maladie Universelle - Complémentaire* | Universal Health Cover – Supplementary |
| **CNAMTS** | *Caisse Nationale d'Assurance Maladie des Travailleurs Salariés* | National Health Insurance Fund for Salaried Workers |
| **COPIL** | *Comité de Pilotage* | Steering Committee |
| **CPAM** | *Caisse Primaire d'Assurance Maladie* | Primary Health Insurance Fund |
| **DREES** | *Direction de la Recherche, des Études, de l'Évaluation, et des Statistiques* | Directorate for Research, Studies, Assessment, and Statistics |
| **DRIEA** | *Direction Régionale et Interdépartementale de l'Équipement et de l'Aménagement d'Île-de-France* | Île-de-France Regional and Inter-*département* Directorate for Facilities and Development |
| **DUP** | *Déclaration d'Utilité Publique* | Declaration of Public Interest |
| **EGT** | *Enquête Globale Transport* | Global Transport Survey |
| **EIS** | *Évaluation d'Impact sur la Santé* | HIA Health Impact Assessment |
| **GART** | *Groupement des Autorités Responsables du Transport* | Association of Transport Authorities |
| **GPE** | *Grand Paris Express* | Grand Paris Express |
| **HCSP** | *Haut Conseil de la Santé Publique* | High Council for Public Health |
| **IAU** | *Institut d'Aménagement et d'Urbanisme* | Paris Region Planning and Development Agency |
| **IDH2** | *Indice de Développement Humain pour la Région Île-de-France* | Human Development Index for Île-de-France Region |
| **IGAS** | *Inspection Générales des Affaires Sociales* | Inspectorate General of Social Affairs |
| **IMC** | *Indice de Masse Corporelle* | Body-Mass Index |
| **INPES** | *Institut National de Prévention et d'Éducation pour la Santé* | National Institute for Prevention and Health Education |
| **INSEE** | *Institut National de la Statistique et des Études Économiques* | National Institute for Statistics and Economic Studies |
| **INSERM** | *Institut National de la Santé et de la Recherche Médicale* | National Institute for Health and Medical Research |
| **INSPQ** | *Institut National de Santé Publique au Québec* | National Institute for Public Health in Quebec |
| **InVS** | *Institut National de Veille Sanitaire* | National Institute for Health Surveillance |
| **IRDES** | *Institut de Recherche et de Documentation en Économie de la Santé* | Institute for Research and Documentation on Health Economics |
| **IRDS** | *Institut Régional de Développement du Sport (département autonome de l'IAU)* | Regional Institute for Sports Development (autonomous department of the IAU) |
| **OMS** | *Organisation Mondiale de la Santé* | World Health Organisation |
| **ONDRP** | *Observatoire National de le Délinquance et des Réponses Pénales* | National Monitoring Centre for Delinquency and Penal Responses |
| **ONDT** | *Observatoire National de la Délinquance dans les Transports* | National Monitoring Centre for Delinquency on Transport |
| **ONISR** | *Observatoire National Interministériel de la Sécurité Routière* | National Interministerial Monitoring Centre for Road Safety |
| **ORS** | *Observatoire Régional de la Santé (département autonome de l'IAU)* | Regional Health Observatory (autonomous department of the IAU) |
| **PDIE** | *Plan de Déplacements Interentreprises* | Business-to-Business Travel Plan |
| **PDU** | *Plan de Déplacements Urbains* | Urban Transport Plan |
| **PDUIF** | *Plan de Déplacements Urbains d'Île-de-France* | Île-de-France Urban Transport Plan |
| **PIMMS** | *Point Information Médiation Multi Services* | Multiservice Information and Mediation Point |
| **PLD** | *Plan Local de Déplacements* | Local Transport Plan |
| **PLH** | *Plan Local d'Habitat* | Local Housing Plan |

| | | |
|---|---|---|
| **PLU** | *Plan Local d'Urbanisme* | Local Urban-Planning Plan |
| **PMI** | *Protection Maternelle et Infantile* | Mother and Child Care |
| **PMR** | *Personne à Mobilité Réduite* | Person with Reduced Mobility |
| **PNNS** | *Plan National Nutrition Santé* | National Nutrition Health Plan |
| **PNSE** | *Plan National Santé Environnement* | National Health Environment Plan |
| **PPBE** | *Plan de Prévention du Bruit dans l'Environnement* | Environmental Noise Prevention Plan |
| **PPPI** | *Parc Privé Potentiellement Indigne* | Potentially Rundown Private Stock |
| **PRQA** | *Plan Régional de la Qualité de l'Air* | Regional Air Quality Plan |
| **RFF** | *Réseau Ferré de France* | French Railway Network |
| **SCOT** | *Schéma de Cohérence Territoriale* | Urban Master Plan |
| **SDRIF** | *Schéma Directeur de la Région Île-de-France* | Île-de-France Regional Master Plan |
| **SGP** | *Société du Grand Paris* | Grand Paris Company |
| **STIF** | *Syndicat des Transport d'Île-de-France* | Île-de-France Transport Syndicate |
| **TIC** | *Technologies de l'Information et de la Communication* | ICTs – Information and Communication Technologies |
| **WHO** | ----- | World Health Organisation |
| **ZAC** | *Zone d'Aménagement Concerté* | Joint Development Zone |
| **ZAPA** | *Zone d'Actions Prioritaires pour l'Air* | Air Priority Action Area |
| **ZUS** | *Zone Urbaine Sensible* | Underprivileged Urban Area |

# SOMMAIRE

# 1. INTRODUCTION

Plaine Commune is a metropolitan government structure associating nine towns in the department of Seine-Saint-Denis located north of Paris, in the Île-de-France region. It is an area of contrasts between industrial wasteland and new office buildings, and it is strongly marked by its history as a working class suburb. Its population is young and from a range of cultural backgrounds, with a significant part experiencing social difficulties. Significant imbalances in development between the north and the south of the area continue to exist. Furthermore, public transport provision in the local area remains insufficient, with the local network being poorly tailored to "home-to-work" journeys.

As part of the Local Area Development Contract associated with the Grand Paris project, Plaine Commune is one of the local areas with the strongest potential for growth and development in the Paris metropolitan area. One of the Local Area Development Contract's five challenges is "better journeys across the local area, being connected to the metropolis". Five main objectives have been selected for that challenge: improving the offer and quality of existing public transport, and developing a new offer to improve exchanges between suburbs; limiting the presence of cars in the town; opening up the local area and making it accessible to pedestrians, cyclists, and users of public transport.

The Plaine Commune urban area and the Île-de-France ARS (Regional Health Agency) wish to carry out a Health Impact Assessment (HIA) in respect of transport projects that are being developed or that are planned for the local area of the community. The ARS intends to develop advocacy tools so that health is taken into consideration in local urban planning projects and other public policies, in order to reduce social and territorial health inequalities. Similarly, Plaine Commune is experiencing significant transport network growth across its territory, and will be a major node of the Grand Paris project. It wishes to ensure that those developments are carried out for the benefit of all residents.

This HIA covers three transport projects: the *Tangentielle Nord* (TN), the T8 *Sud tramway* (T8 South tramline) and Saint-Denis Pleyel Station. The aim of those projects is to open up the north of the area thanks to an inter-suburb link, to provide services to densely populated residential areas, and to develop the Pleyel neighbourhood as a new focal point for the local area.

The HIA, the results from which are presented here, was given scientific co-ordination by the ORS IDF (Île-de-France Regional Health Observatory) and the ARS IDF (Île-de-France Regional Health Agency); it received methodological support from the University of Liverpool's IMPACT[1] group.

The study falls within a context of developing HIAs in France.

1 http://www.liv.ac.uk/ihia/

# 2. WHAT IS HIA?

The Health Impact Assessment (HIA) is a process, aiming to help policy decision-making, that is characterised by a scientific and participatory approach. It brings together political decision makers, stakeholders from public healthcare, and concerned persons. It is part of a dual aim to promote health in all public policies and fight health inequalities by taking into account its causes. It is defined as a combination of procedures, methods and tools, which aim to identify, generally before decisions are made, the positive or negative impacts of a policy (or programme) on the health of the population, and the distribution of those impacts within the population. Those recommendations are based on a set of objective elements that include contextual and scientific data, as well as opinions gathered from experts and the population concerned.

This methodological procedure was largely disseminated internationally, following the initiative of pioneers including Alex Scott-Samuel (IMPACT, University of Liverpool), subsequent to the Commission on the Determinants of Health (WHO) and the inter-sectoral approach to health in all policies (WHO). It is based on a socio-environmental model of health, and incorporates a certain number of values. Democracy - People have the right to participate in the formulation and decisions of proposals that affect their life. HIA should involve and engage all the stakeholders in decisions, in particular the population concerned. Equity - The will to reduce inequities that result from avoidable differences in health determinants and/or health status within and between different population groups. HIA should consider the distribution of health impacts across the population, paying specific attention to vulnerable groups. Ethical use of evidence - The ethical use of evidence is ensured by rigorously gathering and processing data. All evidence is valued and recommendations are developed impartially. Finally, HIA should use evidence to judge impacts and inform recommendations.

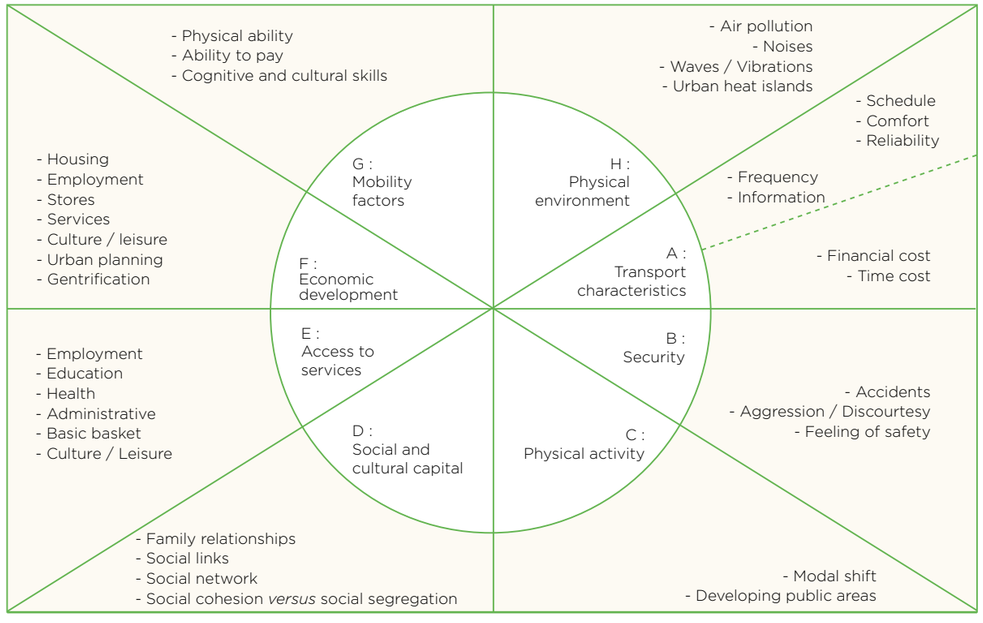
# 3. METHODOLOGY

This HIA is of an intermediate size; no collection of new data has been put in place through specific survey or new modelling. Environmental, strategic, and other assessments already done on the projects studied have been taken into consideration. Qualitative data were collected from potential transport users (see chapter 6). Finally, individual interviews were conducted with experts and key informants to supplement the assessment of impacts. The HIA guide drawn up by IMPACT was used[1].

## 3.1 THE DETERMINANTS OF HEALTH

The assessment team selected a wide definition of “determinants of health” (conceptual framework of health and of its determinants, Quebec). From the very start of the HIA, a list of potential impacts on health was built up, taking into account all the determinants of health. The aim of that initial tool was to identify correlations between the three transport projects and potential impacts on health. During the development of the HIA, with the help of a literature review, the population profile and the data from the focus groups conducted, it became possible to organise the data collection based on specific model of health determinants. The diagram below represents the analysis framework selected by the assessment team for this HIA.

1 Scott-Samuel, A., Birley, M., Arden, M.: The Merseyside Guidelines for Health Impact Assessment. Liverpool: Merseyside Health Impact Assessment Consortium, 1998 (revised 2002)




Mapping the determinants of health – Plaine Commune transport HIA

## 3.2 HIA GOVERNANCE

Governance was provided by a steering committee (COPIL), a small decision-making body that guides the progress of the Health Impact Assessment (HIA) of the transport projects selected, carried out by the assessment team.

COPIL included[2]: the Commissioners: Plaine Commune and the ARS IDF (Île-de-France Regional Health Agency); the stakeholders, including the promoters of transport projects: the SGP (*Société du Grand Paris*), the SNCF (France's national state-owned railway company), the RATP (Paris' Autonomous Transport Organization), and the STIF (Île-de-France Transport Syndicate), as well as institutions with an interest in the development of those projects; the ARS local office in Seine-Saint-Denis *département* (*département* number 93), the Plaine Commune Development Council (representatives of civil society), the club of Human Resources Managers for Plaine Commune Promotion, the association of Plaine Commune transport users, and the Environment 93 environmental protection association. INPES was present as an observer at steering committee meetings. An expert from IMPACT took part to the COPIL meeting as a facilitator and with an educational role in relation to HIA approach.

The assessment team was responsible for implementing the HIA and for presenting the HIA report to COPIL. The assessment team came under the responsibility of two chief assessors, and also included[3]:

- for data collection: an epidemiologist from the ORS (data from the population profile) and two research analysts from Paris Region Planning and Development Agency (mobility and accessibility data),
- for public participation: the manager of Profession Banlieue (Seine-Saint-Denis urban policy resource centre), representatives of the services of the three towns selected, a representative of the local area in charge of public participation, and a social-science researcher in participatory methods (CEREMA, Lyon).

Once the HIA scoping step had been completed, the assessment team's terms of reference were sent to the COPIL.

The team received methodological support from the University of Liverpool's IMPACT group.

The HIA was carried out using action learning methods, with the assessment team taking part in an Action Learning Set (ALS), building HIA capacity among the partners, learning about HIA methodology and implementing it in a phased, stepwise way, all under the guidance of IMPACT, originators of the HIA methodology. The ALS met five times between May 2013 and November 2014 to carry out the HIA.

Action learning is a continuous process of learning and reflection that happens with the support of a group or "set" of colleagues working with real problems with the aim of getting things done. In this instance, the approach was used to learn about HIA, through the HIA of Transport Schemes for Plaine Commune.

## 3.3 THE HIA PROCESS

In general, an HIA includes five steps implemented by the assessment team (see diagram below).

| | |
|---|---|
| Screening | • Identifying components of the project proposal that may have an effect on health<br>• Deciding if the process must be followed |
| Scoping | • On what, with whom, how, and when.<br>• Special attention has to be paid to groups identified as the most disadvantaged. |
| Assessment | • Reviewing scientific literature<br>• Consulting experts and the population concerned<br>• Research and analysis |
| Recommendations | • Report editing with results of assessment and recommendations for reducing potential negative impacts or maximising positive impacts |
| Evaluation / Monitoring | • Reviewing the process to improve future HIAs<br>• If possible, monitoring the real impacts of the policy or the project |

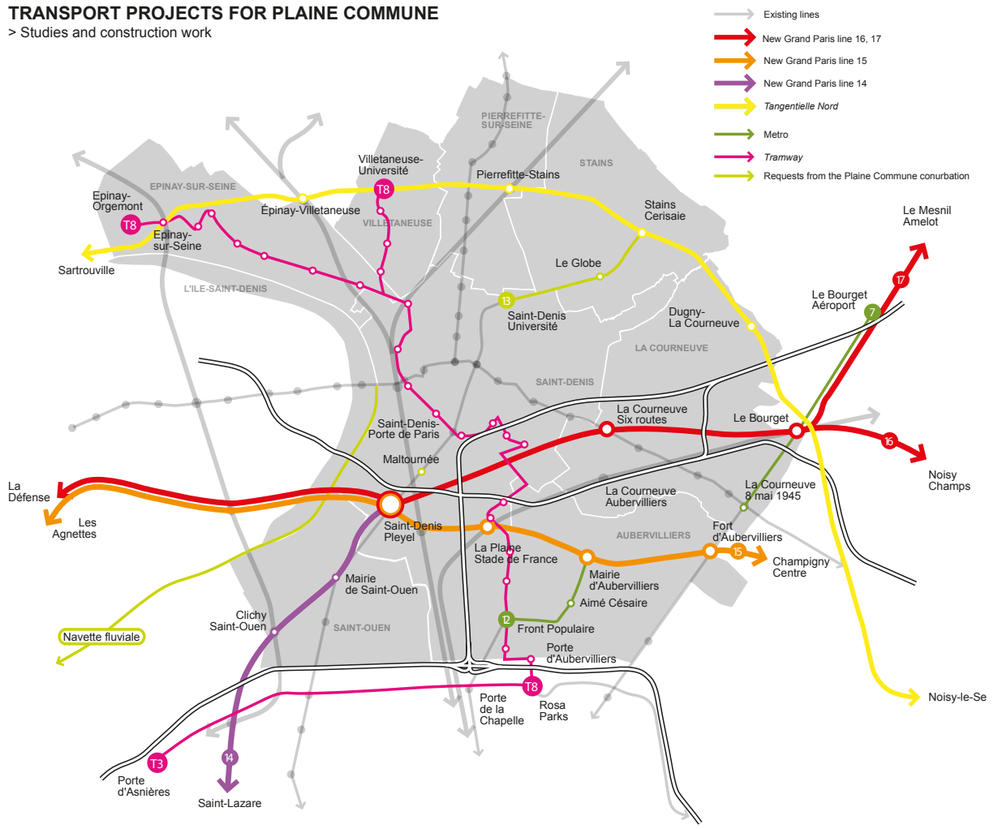
**Source**: The International Union for Health Promotion and Education (IUHPE), assessment of the impact on health: an aid to public decision-making for healthy, sustainable, and equitable choices, 2012.

***The screening*** enabled to choose three projects amongst 40 projects covering lines, extensions, stations, and roadways planned for the local area. Six criteria were defined by the steering committee: project adaptability, inter-suburb service, service for the most disadvantaged populations, connectivity, significance of the work phase and crossing an area with environmental black spots. By relying

2 See detailed list in Annexe 1

3 See detailed list in annexe 1

on these criteria and exchanges with key informants (with an overall knowledge of all the local area's transport projects), a scenario, was selected. It included three projects: the *Tangentielle Nord*, the southern extension to the T8 *tramway* (TRAM'Y) and Saint-Denis Pleyel metro Station, including the crossing between the Landy and Pleyel neighbourhoods (see map below).




**a. Tangentielle Nord (TN)**

The TN is a tram train that will provide a link between Sartrouville and Noisy le Sec, and will serve the north of Plaine Commune. The TN will use two new electrified tracks along the outer ring tracks. It will form a transverse link, and will be connected to the existing radial public transport network (RER lines A, B, C, D, and E, plus lines out of Paris Saint Lazare Station and Paris Nord Station) as well as to buses and *tramways*. The TN line will enable an urban renewal of the area served (northern arc). This area is a priority development area for Plaine Commune, thanks to a policy of setting up economic activities around station clusters set along the section from Épinay sur Seine to Dugny La Courneuve (see map above).

**b. T8 *Sud tramway***

The T8 *Sud tramway* follows a separate line, and should run from Porte de Paris (southern extension of Tram'Y) to Rosa Parks Station on RER line E along Boulevard MacDonald (Paris). It will serve dense social housing areas (Franc Moisin, Cité des 4000, etc.), and will give access to a range of facilities (a hospital, several schools, and cultural centres). Its southern stretch will cross several economic and residential development zones (at Montjoie, Nozal Chaudron, and Porte d'Aubervilliers), and it will create a link to RER lines B and E, the T3 *Est tramway*, Metro line 12, Tram'Y to the north, and the *Tangentielle Nord*.



**c. Saint-Denis Pleyel Station**

Saint-Denis Pleyel Station is a future metro station of the Grand Paris Express (GPE). It forms a node between three GPE lines, Metro line 13, and RER line D (and, possibly, line H of the *Transilien* system). An urban development project is planned in the Pleyel neighbourhood, with the aim of setting up a new central point in Plaine Commune's multipolar system. The conditions for a significant modal shift planning away from private vehicles are being considered, via constraints on parking, by reorganizing the network of local roads and by restructuring public areas to encourage active modes of transport.

***The scoping stage*** of the HIA set out the timeframe and the geographical and population limitations of the study. Active modes of travel were taken into consideration (cycling and walking), but freight and air transport were not included in the study. Given the different phasing of the three projects and of the timescale of the study, the construction phase (construction works, work sites, etc.) of the projects was not included in the context of this HIA, in spite of the significance of its impacts on health.

With a view to gathering data from the population, the geographical area of the study was limited to the areas of Villetaneuse and Stains for the *Tangentielle Nord*, to the Franc Moisin neighbourhood (Saint-Denis city) for the T8 *Sud*, and to the Pleyel neighbourhood (Saint-Denis city) for Saint-Denis Pleyel Station and its associated urban-planning project (the Landy-Pleyel rail crossing).

***The analysis*** relied on:

- an analysis of the projects based on available documents and interviews with key informants
- an analysis of the policy context of the projects (fields of transport, urban planning, environment, and health) at international, national, regional, and local levels
- a description of the social, health, economic, and environmental profile of the population of the three towns (Villetaneuse, Stains, and Saint-Denis)
- a literature review (scientific articles and grey literature) on the links between transport and health
- interviews with experts on specific aspects of scientific literature
- focus groups organised with disadvantaged groups within the populations of the selected, towns with focus group attendees being invited through associations (young people, women in language-based socialisation, job seekers, residents taking part to a neighbourhood council or community centre, etc.)

***The assessment of health impacts*** included several phases. To begin with, the construction of causal models allowing from the components of each project to estimate direct and intermediate effects on determinants of health, followed by the effects on health and well being. Next, the project's impacts for each determinant were qualified based on all the data gathered. A table of potential impacts summarises the results by specifying the direction of the impact (positive or negative), the effect on health and wellbeing and on population groups affected differently. In addition, three criteria enabled impacts to be prioritised: the size of the population concerned, the intensity of the effect on health, and the likelihood of the effect occurring.

***Recommendations*** were drawn up based on potential impacts identified and thanks to all the data available. A return visit to the population to co-develop some recommendations was organised with all focus groups participants from the three towns.

***Monitoring and evaluation*** of the HIA is a subsequent stage that aims to measure the HIA's effects on decisions relating to the projects studied, on the ownership of recommendations by the population, and on the continuation of the inter-sector dynamic generated during the HIA.

# 4. MATERIAL GATHERED

## 4.1 LITERATURE REVIEW

*This section presents a summary of scientific literature on links between the determinants of health considered in this HIA and population health. References are available in the full report (see chapter 4, page 83-93).*

Transport has direct, indirect, positive, and negative effects on health. The direct effects of transport on health include, depending on the modes: health risks (air pollution, noise, and accidents) as well as health benefits (physical activity related to walking or cycling). Transport also has indirect effects on health linked to accessibility to various types of services and social interactions that, as determinants of health, will affect physical and mental health. The most studied links between transport and health are health risks, which are quantifiable, compared to health impacts linked to access to services, work, and social relationships, for which links to health have been demonstrated but for which measure is more often qualitative.

**Transport characteristics** (comfort, reliability, timetables, information, etc.) have varying impacts on the quality of life of individuals, as shown by several studies. Specifically timings and conditions of commuting have effects on the quality of sleep, daily stress, burn out syndrome, frequency of sick leave, workplace aggressiveness, and, overall, on various perceived and objective health indicators. Mixed mode commuting (intermodality) may require a physical effort that gets more significant with age increasing or in cases of reduced mobility. The mental and cognitive effort to seek out and interpret information can cause stress, in case of fear of missing transport connections.

Transport has an impact on **safety**, i.e. accidents, aggression / discourtesy, and the feeling ofinsecurity, which is not related to having been oneself a victim of events (robbery or assault). Almost half of transport users in Île-deFrance feel unsafe aboard transport, but only 3% have been the victims of assault. Fraud and discourtesy contribute to the feeling of insecurity, which causes anxiety and stress. Public transport can foster a modal shift from cars to active modes. The expected benefit / risk in terms of individual and collective health from the modal shift from car to bicycle was the subject of a review of international scientific literature that concluded that the benefits remain high (mainly due to the effects of physical exercise at an individual level, and to the fall in pollution at a societal level), in spite of the risk of accidents for cyclists.

The literature on the health benefits of **physical activity** in the context of using bicycles or of walking for daily transport suggests a reduction in cardiovascular risk as well as a lowering of the risk of type 2 diabetes, of breast and colon cancer, and of depression. It has been shown in Île-de-France that using public transport is associated with significantly higher energy expenditure than if a motorised vehicle is used. Urban planning can encourage active mobility under certain conditions of road safety. It also depends on traffic-related nuisances (noise and air pollution), personal safety (lighting, etc.),

æsthetics (green spaces, historic elements, open areas, and landscapes), walkability (pavements and designated paths, shady sites, presence of benches, etc.), continuity and connectivity (street connectivity, density of intersections, urbanedges), and functionality (proximity and accessibility of facilities, services, and transit interfaces). Relationships between urban green areas and health are complex and multidimensional. A critical review of literature shows a positive link between green areas and general health conditions. Four potential mechanisms are proposed: green areas may have a protective effect against certain types of environmental exposure; they may reduce stress; they may lead to better recovery from burn out and they may encourage physical activity. However, some social groups or disabled persons are less inclined to use public green areas. Amongst the negative effects on health associated with those places, the critical review mentions the risks of antisocial behaviour, assault, and unprotected sex.

Public transport contributes to **social and cultural capital**. It encourages social networks and social support, which are factors linked to health. Social networks and social support act through sources of information and the goods that they bring about. Social cohesion allows for healthy lifestyles to be incorporated, and contributes to collective effectiveness in resolving problems of access to care. In particular, those components seem related to better access to antenatal care and to a reduction in infant mortality. Social capital has also been found to be linked to better cardiovascular health, with reduced risks of strokes and heart attacks, a reduction in the risk of cancer, and an improvement in mental health.

Urban planning in relation to transport projects can lead to a process of **gentrification**. That is an urban phenomenon by which newcomers who are better off can take over an area that was initially occupied by inhabitants who are less well off, thus changing the economic and social profile of the area to the sole benefit of a higher social stratum. The final result is the displacement of the most modest populations, who are unable to afford their rents or who cannot buy basic essential items close by. The health implications are greater on some populations groups: children, women, elderly people and recently immigrating population groups. Studies carried out show a fall in life expectancy, higher infant mortality, a higher prevalence of cancer and an increased incidence of asthma, diabetes, and cardio-vascular diseases. In addition, worsened living conditions can lead to exposure to environmental poisons (lead, etc.) Remoteness in areas that are less well provided with services and transport leads to increased stress, raises the risk of accidents, and affects mental health.

**Access** to services (administrative, health, leisure, cultural, etc.) and functions (employment, education, etc.) has an indirect impact on health. Access to employment may have several health consequences. Employment may have a direct negative impact through professional exposures, as well as psycho-social stress depending upon working conditions. There may also be an indirect positive impact due to the resources provided by work: financial, material, and psycho-social benefits. Employment allows social inclusion, improves social networks and social support, and thus has indirect positive effects on health. Conversely, various studies show the very strong link between unemployment and poor health at all ages. Employees with an unemployment work history present degraded health for equivalent socio-demographic characteristics. An unemployed man has an annual death risk that is about three times as high as an employed man of the same age. Access to basic essential items is also an essential determinant of health, in particular access to healthy nutrition (including fresh fruit and fresh vegetables). Transport may affect that accessibility, in relation to people's physical ability (reduced mobility) and to the cost of public transport to get to shops that are further away but cheaper. Healthy nutrition protects against cardiovascular diseases, certain cancers, and type 2 diabetes. Access to health services is one of the determinants of appropriate access to care. Delay in access to care or not having appropriate care are aggravating factors of morbidity and of increased mortality risk.

**Mobility** is an intermediate good that enables access to work, health, leisure, education, and social networks. Inequalities in access to mobility mark off vulnerable groups: unqualified young people, job seekers, poor families, some migrants (in particular those with poor understanding of French), single women with children, disabled people, elderly people, and people living in very disadvantaged areas. Three mobility factors have been defined in this study: physical ability, cognitive and cultural skills, and the ability to pay. Physical ability refers to people with reduced mobility (in the wider sense: disabled people, elderly people, and women with children) who may experience a loss of opportunity in relation to their health and wellbeing. Cognitive and cultural skills indicate the ability to work out how to get to places to which one must travel, prior appropriation of the area, and practical experience. That knowledge of the area is not easy in the context of the increasingly complex public transport system in Île-de-France. Other skills, linked to information technologies, are and will be required in order to use transport in the years to come. The "digital divide", which describes inequalities in access and use of ICT, may lead to a loss of opportunity for certain populations. The ability to pay leads to another inequality for access to mobility. The entitlement to social pricing was implemented in the SRU (Urban Solidarity and Renewal) law in 2000, but only a minority of those entitled actually benefit from it, due to the law being ignored, its complexity and its lack of application in some local areas.

Transport has an impact on the **physical environment**, in particular on air quality and on urban noise. Urban transport, especially road transport, forms a major source of atmospheric pollution. Several epidemiological studies have highlighted the links between air pollution peak and short-term health effects: coughs, irritations, bronchitis, asthma attacks, and cardiovascular illnesses. The long-term effects described, following chronic exposure to atmospheric pollution, are an increased risk of developing lung cancer or a cardio-pulmonary disease. Emerging studies also suggest a link with neurological development, cognitive function, and diabetes. Noise affects a significant proportion of the population in urban areas. One third of the population is affected during the day, and one fifth is disturbed when asleep (road, rail, and aircraft noise). Environmental noise leads to indirect extra-auditory effects that are more difficult to highlight and quantify than auditory impairments. Extra-auditory impairments can be grouped into three main categories: effects on the cardio-vascular system, effects on mental health and effects on sleep. Noise has negative effects on health, and disturbs the quality of life as well as the wellbeing of persons exposed. Those effects concern, in particular, most sensitive population groups (children, elderly persons, etc.) and socially disadvantaged population groups, who are more frequently exposed to environmental noise and who have fewer resources for avoiding it. The latter may also suffer from other risk factors, particularly professional ones.

## 4.2 POPULATION PROFILE

*This section presents a summary of the data gathered to establish the population profile that is potentially affected by the projects. References and sources for the data presented are available in the full report. (See chapter 5, page 131-132).*

The population profile of the three towns included in the HIA includes the socio-demographic, economic, health and environmental data that characterise them. Challenges in relation to current mobility and future accessibility complete the profile and enable the understanding of the context into which those new projects fit.

### 4.2.1 SOCIO-DEMOGRAPHIC AND ECONOMIC DATA

Plaine Commune displays an economic dynamism in contrast with the significant level of unemployment and the job insecurity of local populations. The population of the towns studied (Saint-Denis, Stains and Villetaneuse) is younger than that of the *département* and of the region as a whole, as shown by the youth indicator, which is twice as high for each town relative to the indicator calculated for the region as a whole (1.4). The proportion of large families is twice as high in Villetaneuse and Stains compared to the whole of the *département*. Single-parent families (almost 90% of which involve single women) account for one quarter of families, a proportion that is much higher than that for the region (17%). The foreign population is significant in the towns, at between 23% and 34%, compared with the *département* (21%) and the region (12.6%). Young people in the towns experience difficulties in

education. The various indicators studied: the proportion of young people aged 15 to 17 in school, the proportion of students entering *6ème* (the first year of secondary education) with a delay of 2 years or more, the success rate at the general and technological *baccalauréat* (secondary-school leaving examinations), are all unfavourable when compared with data for the *département* and the region. Those elements form the background to significant difficulties in accessing employment in these towns. The proportion of the population that is in work amongst people aged 15 to 64 in Saint-Denis, Stains, and Villetaneuse (73.5%, 67.4% and 71.6%, respectively) is lower than that of the region (75.4%). Those rates are significantly lower for women compared to men, with gaps between 8 and and 11 points, whereas the gap is only 6 points at a regional level. The unemployment rate amongst people aged 15 to 64 in the towns (around 22%), is about twice as high as the rate for Île-de-France (11.1%). Young people aged 15 to 24 are even more affected by unemployment than the rest of the working population (between 36% and 39%, depending on the town). The social structure of the working population living in the three towns and in employment is differentiated from that in Île-de-France by a higher proportion of workers and employees, and a significantly lower proportion of managerial staff and people in intellectual professions. The number of jobs in Plaine Commune is higher than the population of working age, and the social structure of the population working in the municipalities is different from that of the working population living in them. The increase in tertiary-sector jobs in Saint-Denis has been very significant, with the greatest increase observed in managerial staff. The installation of several large businesses in La Plaine neighbourhood (the former industrial neighbourhood of Saint-Denis, now a vast area covered by housing and essentially tertiary-sector businesses) has involved, for many people, a transfer between jobs, and less jobs genuinely offered on a local basis.

Inequalities are not decreasing for this local area, as is attested by the annual median income (around €12,000) that, in the towns, is half the average figure for the region (approximately €22,000), and for which the rate of increase over 10 years is lower than the regional rate. Furthermore, a significant spread of income is noted in the towns and is far less marked in the reference local areas. The proportion of the population covered by the RSA (Earned Income Supplement) is over twice the proportion at regional level. Another indicator shows the low income level of those households: the rate of social housing that accounts for half (in Saint-Denis) to over two thirds (in Villetaneuse and Stains) of main residences, those figures being significantly higher than the average for the *département* (36.7%) and the region (25%). In addition, the proportion of over-occupancy (26.6%) is much higher than at regional level (17.7%). In addition, the stock of undecent private housing is the highest in Île-de-France.

The level of delinquency observed across the local area, based on ONDRP[1] data on crimes and offences observed in 2012, is relatively high when compared with other local areas in Grand Paris (the Paris *arrondissements* and the municipalities of the Inner Paris area). This does concern specifically: deliberate attacks on physical integrity, physical violence with or without a motive, robbery without violence, robbery with violence but without a weapon against women in public areas, destruction and degradation and offences against drugs legislation.

### 4.2.2 HEALTH DATA

Life expectancy at birth in the three towns studied is between 2 and 3 years lower than life expectancy at regional level, for men and for women during the period from 2009 to 2010. Similarly, life expectancy at age 60 for men and women in the three towns considered is also lower than for the region, with gaps of 1.3 to 1.6 years lower for men and 1.7 to 2.7 years lower for women. The death rate for all causes and premature-death rates (before age 65) are higher for those towns compared with the *département* and the region. However, the most alarming indicator is the infant-mortality rate for the *département*, particularly the neonatal-death rate (between birth and age 28 days), which stood at 3.6 deaths per 1000 live births, compared with 2.7 for Île-de-France (2006-2008). Finally, violent deaths (including traffic accidents) were the leading cause of death amongst young men aged between 15 and 34 between 2008 and 2010.

1 National Monitoring Centre for Delinquency and Penal Responses



In terms of morbidity, cardiovascular diseases, type 1 and type 2 diabetes and malignant tumors are the main causes of admission to the long-lasting conditions" status amongst people aged 35 to 64 and 65 to 84 in Seine-Saint-Denis *département*. People under 15 admitted for that status show mainly psychiatric conditions and serious chronic respiratory conditions. Cardio-vascular diseases in men and diabetes (amongst men and women alike) are over-represented in the *département* when compared with the region.

Obesity amongst children at school in Seine-Saint-Denis (from young childhood to adolescence) is more prevalent than at a national level: 13.6% against 10.6% (in 2004). The same problem is observed for adults (17.6% were obese and 32.7% were overweight - results of a survey done at a health insurance medical examination centre). Moreover, the *département* has the highest prevalence rate in France for diabetes (5.8%, compared with 3.2% in Paris and 4.4% for the whole of France in 2009). Two infectious pathologies, tuberculosis and HIV infection, present incidences that are higher than in the Île-de-France region or the whole of France. That is linked with the significant proportion of the population who was born in Sub-Saharan Africa, an area with a high prevalence of those two pathologies and by living conditions that foster transmissible diseases.

Regarding the care offer and consumption, the *département* is characterised by a density of physicians that is lower than the regional and national averages, and amongst the lowest in Île-de-France. The number of pædiatricians and gynæcologists is very low, but there is a significant number of centres offering mother and child care. Health centres are local structures that offer care and prevention, and are reasonably well spread out across the local area, except for the east of the *département* and Villetaneuse. That weakness in the offer of primary care explains why care consumption by a large proportion of residents takes place outside the town of residence: in Seine-Saint-Denis *département*, (between 10% and 50%, depending on the speciality), in Paris (between 4% and 30%), and in neighbouring *départements*. The inhabitants of those municipalities are currently dependent on means of transport for access to care.

In terms of healthy lifestyle, practising sport in the *département* is highly dependent on urban planning and on perceived safety. In Seine-Saint-Denis, sport is practised at lower level in all population categories compared with Île-de-France. In Seine-Saint-Denis, 50% of users drive to get to the sports venue, and 22% use public transport. Impediments to practice sport that are most often cited are a lack of time, limited opening hours, and access prices. The appropriation of public areas, provided that they are deemed sufficiently safe and non-polluting, offers a route to developing sporting practice.

Addictive behaviours are differentiated by rates of stops for drunkenness in public that are lower than regional and national rates. On the other hand, the number of persons stopped for drug use in the *département* remained fairly stable between 2000 and 2006, and increased sharply after 2007. That increase covers stops for cannabis use, which accounted for 95% of stops for drug use in 2009.

Plaine Commune is criss-crossed by motorways (the A1 and the A86) and is close to airport areas. It suffers from environmental nuisances that are mainly linked to atmospheric pollution and noise, which can affect the health of residents. In 2012, the threshold for $NO_2$ (40mg/m$^3$) was exceeded along about 230 km of roads in the *département*, i.e. about 30% of the road network and about 15% of the *département*'s area. Nearly 300,000 inhabitants are potentially exposed to air that exceeds the annual threshold value, which represents about 20% of the *département*'s population. The entire *département* and all its inhabitants would be affected by the quality objective (10mg/m$^3$) for fine particles (PM2.5) being exceeded, whereas in 2012, the annual objective for PM10 particles (30mg/m$^3$) was exceeded along about 100km of roads, i.e. almost 15% of the road network. As regards noise nuisances, at night, almost 15% of the population of Plaine Commune is exposed to over 62 dB (A) (above thresholds), and about 3500 people are exposed to levels of over 70 dB (A). In addition, due to the number of infrastructures and the high density of the built environment, multiple exposure is significant in Plaine Commune.

### 4.2.3 MOBILITY ISSUES

Mobility challenges across the three municipalities are differentiated depending on whether one considers people in work living in the local area, or people in work who come to work in the three municipalities. The gap between the social make-up of residents in work and that of jobs in the municipality has been described above. It takes the form of two different challenges in terms of flows, with municipalities having few jobs, seeing more exits at morning peak hours and entries at evening peak hours (Stains). The situation is reversed for municipalities with more jobs than they have people in work (Saint-Denis). Moreover, the qualifications held by working people in the local area do not necessarily match local needs, leading to municipality residents holding a low proportion of jobs across the three municipalities (one job in three in Saint-Denis, one in five in Stains, and one in six in Villetaneuse). Those imbalances lead to significant flows of home-to-work return journeys.

Working residents in the three municipalities have three main destinations: the *département* itself (between 40% and 45% of journeys, counting intra-municipal journeys and those to the other municipalities), Paris (30%), and Val d'Oise *département*. Destinations differ according to the type of job and the municipality of residence. Managerial staff have little work "on site", and go mainly to Paris and to the Hauts de Seine *département*, whereas a significant proportion of workers from Stains and Villetaneuse go to work in Val d'Oise *département*, Roissy in particular. The modes used vary greatly, depending on destination. Public transport predominates in journeys to Paris, and, to a lesser degree, to Hauts de Seine *département*. The residents of Saint-Denis have also a fairly significant use of public transport for journeys within the municipality. On the other hand, cars predominate for journeys to Val d'Oise *département*, and ties with public transport for journeys within the *département* for workers from Stains and Villetaneuse. Public transport is better suited to home-to-work journeys by management staff and by employees whose jobs are more concentrated and more central, and less so for journeys by workers, for whom jobs are often more widespread and more often along the periphery.

Non-residents who come to work in the three towns are most often managerial staff, coming from Paris and from Hauts de Seine *département* to Saint-Denis, and from Paris and Val d'Oise *département* for Villetaneuse. On the other hand, cars tie with public transport, and even overtake it in most situations. A significant proportion of jobs held by employees and workers from the three municipalities are held by working people who live elsewhere in Seine-Saint-Denis; the latter use cars a lot for their journeys (in particular to get to Stains). That is even more the case for working people coming from Val d'Oise *département* in particular: two thirds of them travel by car.

It should be noted that the vehicles used by households in Seine-Saint-Denis present specific characteristics that are mainly related to the *département*'s socio-economic context. That vehicles are older overall than those of all the other *départements*, with 60% of the vehicles being over 10 years old, compared to less than 50% in the other Île-de-France *départements*. On the other hand and include a high proportion of Diesel fuel vehicles. Consequently, there is a significant health challenge, with working people who are caught between a need for car-based mobility and a constraint involving the use of old vehicles that pose pollution problems in particular.

## 4.3 THE *VERBATIM* POPULATION REPORT

*This part presents a summary of data collected from the population. The complete* verbatim *report is available in the full report.*

Taking into account residents' opinions as part of this HIA had the aim of awakening the interest of the population and identifying its needs in respect of mobility and transport matters. It was decided to ask the most disadvantaged members of the public, and those furthest from an opportunity to speak out in public, about the matter of transport. Focus groups and interviews were organized with the help of local resident associations and key informants.

The persons encountered were questioned regarding their mode of transport at the time of the survey, as well as regarding their opinions on the potential positive and negative impacts of transport projects on their living conditions and on their health. The analysis of the material gathered in all the focus groups and individual interviews is summarised below on a project-by-project basis.

### 4.3.1 THE TANGENTIELLE NORD

The residents of Stains and Villetaneuse mainly use public transport for their current journeys; they also reported walking a lot, due to an insufficient provision of service. Their transport conditions are marked by the complexity of journeys to get to their destinations, problems with buses that do not run often enough, and unreliability that forces users to anticipate bad service. The cost in time of such journeys, to the detriment of family life or social life, leads to fatigue and stress. Participants reported frequent discourtesy linked to overcrowding (inappropriate language, refusal to give up a seat to priority users, refusal to allow passengers to alight, etc.) Those recurrent acts of discourtesy can also lead to assaults, and the whole situation causes a feeling of insecurity aboard public transport. The availability of public transport is a criterion that is more important than closeness to work for residents in their search for work. In particular, women are unhappy about using public transport to return home at a late hour. Access to various services (health, social security, administrative services, etc.), to school, or to university, as well as to places for obtaining basic essential items is difficult under current conditions for the members of the public encountered. All participants see the cost of public transport as being too high. Some people reduce their mobility due to a lack of knowledge of the area or difficulties in making correct use of written information.

The *Tangentielle Nord* (TN) project is viewed positively overall by the residents. They are sensitive to anticipated comfort, expected reliability, the new timetable information system, and the range of start and end times, which should allow for a rise in the number of journeys. They feel that access to education and professional perspectives will be improved, as will access to services, businesses, leisure, and culture. Economic development around the TN's station clusters may encourage the employment of young people, and local businesses setting up shop may lead to time being saved.

The negative impacts expected on health, according to the participants, concern the noise that may be caused by the TN and will be added to the noise from the freight line. In terms of safety, residents are concerned over large influxes of people from other towns or other neighbourhoods; those influxes risk causing swift degradation of station areas and of trains. Finally, the fare structure for the new service will cover two zones, and questions residents on the new form of transport being accessible to all.

### 4.3.2 THE T8 SUD TRAMWAY

Most residents encountered in the Franc-Moisin area of Saint-Denis indicated, that they used public transport, describing the offer as satisfactory for journeys to Paris and unsatisfactory for other destinations, including nearby ones. A certain number of difficulties were expressed regarding transport conditions, such as overcrowding, a lack of services, and a poor range of starting and finishing times, in particular at the end of the day and at weekends, unreliability, and the time cost affecting private life. Accessibility to local services for daily shopping, health services, and leisure, as well as access to educational establishments or to work were experienced as being complicated. Discourtesy experienced in public areas is also found on public transport (degradation, dirty buses, etc.); a range of graduated assaults was mentioned. A feeling of insecurity was expressed at interfaces between transport and public areas. Participants indicated that they walked a lot in spite of the lack of tailored facilities (lack of safety relative to vehicular traffic, insufficient walkability, division between urban areas, etc.) and the lack of a public transport offer. The lack of local services and the difficulty in accessing public transport

in particular reinforce the residents' feeling of being cut off. The ability to pay for transport was a topic that was hotly discussed in the various groups, with many households being unable to afford transport costs.

The residents expect a range of positive impacts from the T8 *Sud* project. A reduction in over-crowding, ease of access for persons with reduced mobility, better punctuality, increased speed of journeys, and the promise of pleasant surface journeys in a calmed urban environment meet the residents' expectations. To the residents, development in connection with the T8 *Sud* suggests an improvement in co-existence, in particular the æsthetic of their neighbourhood, which will be transformed. In the context of economic development connected to the T8 *Sud*, they await the setting up of a range of services, including businesses. Finally, they see, in the new service, a possibility to reduce atmospheric pollution and noise.

In terms of negative impacts, the residents highlight the problems of safety in the surrounding area (delinquency) that may reach the area of the *tramway*. The T8 *Sud* layout would not improve their access to the historic centre of Saint-Denis, which brings together a certain number of services and businesses. Finally, reorganising the bus network after the *tramway* has been brought into service may disturb habits, and it is something that worries the people encountered.

### 4.3.3 SAINT-DENIS PLEYEL STATION

The residents of the Carrefour Pleyel are in Saint-Denis report that they make frequent use of public transport, and acknowledge that they benefit from a varied offer. They do not feel that current transport conditions are the best they could be, due to overuse at all hours of the day, insufficient availability, and unreliability. Employees of businesses in La Plaine area (with a lot of new office buildings) make the same observation, and emphasise the irregular services on RER lines B and D. The latter mention the cost in time caused by connections that are seen as inefficient; similarly, the lack of reliable information at times of breakdown or lack of service is regularly brought up. The inhabitants note that information is not presented in a way that makes it accessible to all members of the public. The people encountered sometimes feel more insecure when it comes to accessing public transport (due to the presence of industrial wasteland) than they do about the transport itself. Walking is a very frequently used mode of travel, more out of a necessity than pleasure. However, roadways are seen as dangerous by residents and employees alike. The lack of cycle paths that are clearly separated from traffic and from pedestrian areas, the lack of lane continuity, the lack of signage, and the lack of urban furniture (a cycle rack) do not make it easy to use bicycles. The Carrefour Pleyel neighbourhood is isolated by roads and by railway lines; it is subject to desertification as regards shops and health and administrative services. That forces the residents to travel to Saint Ouen (which is more accessible) or to the Landy neighbourhood (in Saint-Denis). In terms of mobility factors, the residents highlighted current difficulties experienced by persons with reduced mobility, particularly due to urban areas and to the cost of transport in a town with several fare zones (1-2, 3) and where a significant proportion of households are in a precarious financial situation.

The residents encountered feel that the new Saint-Denis Pleyel Station project is an improvement to travel conditions, as well as a significant potential modification of the neighbourhood in terms of town planning and population make-up. Positive impacts would include the neighbourhood being opened up, railway lines being crossed to give access to a certain number of essential services that are in La Plaine neighbourhood (secondary school, mother and child care and the primary health insurance fund) as well as to cultural and leisure activities. The residents see the project as an opportunity to set up neighbourhood businesses outside the station and to create a real life for the neighbourhood, as well as being an æsthetic renovation of their urban environment (green area, artistic creations, etc.)

The negative impacts expected are concerns over an influx of users, especially in cars, towards the new central hub, causing an increase in traffic, with an impact on atmospheric pollution and the neighbourhood becoming less tranquil. Similarly, the population density expected around the station is experienced as a source of insecurity in the neighbourhood. The residents have already seen the creation of "Carrefour Pleyel", which has remained "a crossroads of stone". They are concerned over the balance between housing and offices that will arise from the planned economic development, as well as the potential risk of gentrification (destruction of housing stock, increase in property prices, etc.)

# 5. POTENTIAL IMPACTS OF PROJECTS ON HEALTH

The assessment of impacts on health was done on the basis of all the material gathered, and is presented for each of the projects and based on the determinants of health defined for this HIA.

## 5.1 THE *TANGENTIELLE* NORD

- **The characteristics** of the *Tangentielle Nord* (TN) represent a significant improvement in transport conditions with respect to the existing offer in the local area. Comfort, reliability, frequency of service, and cost in time (time saved) represent a benefit for most of the population, in particular for persons with reduced mobility and working people on journeys from home to work, as well as for students. The new ways of providing information should have a positive impact on most of the population. However, for sub-groups that are penalised by the digital divide and for migrants (women in particular, who experience difficulties with language and with knowledge of the area), the impact would be nil, or may even worsen inequalities. The starting and finishing times of the TN service, which will run from 05:00 to 00:00, are significant, and would thus have a positive impact for most users. However, those timings remain insufficient for working people on staggered hours or night shift. The positive effects of those characteristics on health involve a short- and long-term improvement in physical and mental wellbeing, and a reduction in fatigue and stress. For sub-groups who would not derive any benefit, the same expected effects could be nil or even negative.

- The **security** arrangement planned for the TN is reasonably well developed compared with other forms of transport. It should have a positive impact on the feeling of security, with an effect on physical and psychological wellbeing, particularly a reduction in stress and fatigue. However, the significance of assaults and of discourtesy, which are not going down across the local area, leads to concern over the arrangements being insufficient. Those facts may be linked to transport conditions as well as the social environment. The impact on fraudulent behaviour may be unknown or even negative, to the extent that nothing in the project allows a prediction to be made regarding a reduction along this new line in that disadvantaged area. The impact on users' health will be of a medium intensity on types of stress and psychological unease, with fraud contributing to a feeling of insecurity and anxiety during journeys, including for fraudsters. As regards accidentology, the TN may potentially have a positive impact by reducing accidents (vehicles, two-wheelers, pedestrians, etc.) thanks to a modal shift from private cars to public transport and the removal of level crossings along the route. In the short term, that should lead to a lessening of disability and death as a result of accidents.

- **Physical activity** should be encouraged by the modal shift from cars to public transport and active modes (e.g. walking and cycling). Urban planning will include landscaping along the TN's route, enabling neighbouring routes to be created, thus setting up a longitudinal mesh with pedestrian and / or cyclist access to the edge of the route and to the stations; that should encourage people to walk and cycle. In the short and medium term, physical activity reduces the problems of excess weight and obesity that are very prevalent across the area. In the long term, walking and cycling prevent chronic pathologies like diabetes, cardio-vascular diseases, mental illness, and certain cancers, and encourages optimisation of the musculo-skeletal system (see 4.1).

- The TN should have a positive impact on family relationships and **social networks**, and a mixed impact on **social cohesion**. The time saved by TN users should improve the work / life balance as well as reducing stress and fatigue. Thanks to the mobility that it offers, the TN should provide close social support as well as the ability to develop a social network; the latter has shown positive effects on the ability to join socio-economic life and to take part in civic life. Social networks and social support have shown positive effects on health in terms of reducing mortality, better access to care, better recovery after ill health, and better mental health. A certain number of the project's components may have a potentially beneficial effect on social cohesion (urban development, economic development, and security arrangements). However, the new form of transport risks introducing new populations to the municipalities that are the locations for the TN's stations. Social cohesion may thus be threatened by a reduction in the quality of social links and in trust in neighbourly relationships.

- Overall, the TN should improve **accessibility** to jobs and services. Access to work would be favoured by improving the mobility offered to residents of the local area and by running the service to activity hubs. The effect on health will be strong, contributing to a fall in mortality, better access to care, better recovery after ill health, and better mental health. The people most concerned would be young people, job seekers, poorly-qualified people, and women. The TN would have a positive impact on access to education, since it will run to the University of Villetaneuse in particular, as well as to a certain number of primary and secondary schools in the sector for phase 1 (Épinay-Le Bourget); in phase 2, the TN will run to another university cluster at Bobigny. The effect on health of better access to educational facilities would be a reduction in fatigue and stress in the short term, and better physical and mental health in adult life. The groups that are most concerned by that impact are young people and people undergoing vocational training. Access to the health system would be improved by the TN thanks to bringing major facilities within reach, such as L'Estrée Clinic in Stains and, in phase 2 of the project, Avicenne Hospital in Bobigny. Better accessibility leads to a reduction in non-recourse or late access to care, leading to a fall in mortality and morbidity. The TN would have a positive impact on access to other types of services, such as administrative services, cultural and leisure activities, and sports activities. Bringing sports facilities within reach is important, as is access to Butte Pinson Park (Villetaneuse, Pierrefitte) and Georges Valbon Park (Stains). The effect on health would be strong, affecting wellbeing, improving overall health, and reducing excess weight and obesity.

- The project is an opportunity to **develop economic activity** around the TN stations. The TN would have a positive impact through job creation if a significant portion of those jobs were to benefit the population from the local area, particularly young people, job seekers, poorly-qualified people, and women. Otherwise, that impact would be negative, not improving the local unemployment rate and pushing active people with lower qualifications ever further away. The impact of job creation on health would be strong (see the preceding paragraph). Setting up shops or small businesses would have a positive impact on "desertified" areas. The impact of business creation on health would be medium, with better physical and mental health. The *Tangentielle Nord* would have a positive impact on creating services, setting up cultural and leisure centres, and urban development. Those developments would enable revitalisation of the neighbourhoods and are a response to strong demand from the population. The effect on health would be medium to low, with better physical and mental health as well as an improvement in wellbeing.



Improving the attractiveness of the areas crossed by the TN may contribute to attracting new, wealthier populations, leading to a greater social mix. Conversely, gradual gentrification would have a potential short- and medium-term negative impact on the current population. The transformation of the economic and social profile in favour of a wealthier social stratum may lead to the displacement of populations of more modest means who are no longer able to afford their rent or buy basic essential items close by. The impact of segregation on health would be strong, leading to unease, with medium- and long-term deterioration of physical and psychological health.

- Access to the TN depends on **mobility factors**, defined by physical ability, the ability to pay and cognitive and cultural skills. The TN would have a positive impact on physical ability thanks to implementing the standards required in the law of 11 February 2005 on the equality of rights and opportunities, participation, and citizenship for disabled people. The impact on the ability to pay, given the current conditions of zoning and of underuse of the TST – (Social Fare Structure for Public Transport), would be negative for the local area's disadvantaged populations. The impact may be an increase in mobility inequalities affecting disadvantaged people and limiting access to essential services. The effect on cognitive and cultural skills may be negative in the current context of information available to some of the people in the local area who have difficulties with language or with using areas that they do not know, particularly migrant women. A network that is seen as a complex network, combined with difficulties relating to orientation, may lead some women to restrict their travel to their neighbourhood or their town. That inequality of access to mobility may have a medium- and long-term impact on their physical and mental health.

- The impact of the TN on the **physical environment** would be positive. As an electrified, rail-based form of public transport that does not give off any pollution, it should, thanks to the expected fall in road traffic, lead to a significant reduction in pollutants emitted, according to the environmental impact study carried out as part of the public survey. That lessening of atmospheric pollution should have a beneficial effect on health, in the short term by the reduction in the incidence of respiratory pathologies (allergic and non-allergic) and cardio-vascular diseases, and in the long term by a reduction in lung cancers and mortality. The project's impact on noise is deemed beneficial for people living along the route, thanks to compensatory measures planned (acoustic screens and façade protection). The effect on health would be a reduction in barriers to communication, better quality of sleep and wellbeing and stress reduction in the short and long term. According to the environmental impact study, the level of vibrations and of electromagnetic waves caused would not have an impact on the health of users or people who live along the route.

## 5.2 THE T8 *SUD TRAMWAY*

- The **characteristics** of the T8 *Sud* should have a positive impact on comfort, reliability, frequency of service, and time cost. The service will start earlier and finish later, running from 05:30 to 00:30 during the week and from 06:00 to 00:30 at weekends. That breadth of service should have a positive impact for working people and students. However, for people working staggered hours or night shifts, the offer remains unsatisfactory. The question of peak hours should be considerably improved by the planned frequency of the T8 *Sud* (3 minutes during peak hours, 5 minutes at off-peak times) and its passenger-carrying capacity. Those new conditions should lead to a reduction in fatigue and stress. Information for users from the *tramway* will have a mixed impact for people with difficulties in understanding the network. The T8 *Sud*'s impact on fraudulent behaviour (financial cost) would be negative under the current conditions of the project, given the easiness of committing fraud when travelling by bus or tram. Being unaware of entitlement to free or reduced-rate travel is a partial explanation for such behaviour. Fraud covers people of all ages and status (retirees, mothers, young people, etc.), and it contributes to the anxiety-inducing nature of public transport, which is able to cause stress and psychological unease.

- The T8 *Sud*'s impact on **safety** would be positive for accidents and mixed for the feeling of security and assaults / discourtesy. The T8 *Sud* would have a positive impact on safety due to a reduction in the number of accidents involving vehicles, two-wheelers, and pedestrians, caused by the reduction in traffic due to the modal shift. The resulting effect on health would be a fall in disability and deaths. Improvements to transport conditions and the calmed environment of the town along the T8 *Sud*'s route are factors that contribute to reducing discourtesy. However, discourtesy is also linked to the social environment, and the town of Saint-Denis presents fairly unfavourable indicators on crime and offences. The feeling of security will be improved during journeys thanks to modernised transport conditions and an improvement in living conditions. For residents, the challenges of security and a feeling of security are expressed in the overall context of the neighbourhood. Women are more particularly worried when returning to their neighbourhood at a late hour, given that groups of young people occupy the area. The impact of assaults / discourtesy and of the feeling of insecurity takes the form of stress, anxiety when using public transport, and short- and long-term physical and psychological unease.

- The T8 *Sud* should enable an improvement in **physical activity** due to the modal shift and development of the urban area. Although it is a local transport service, its link with the other lines of the local area will enable some residents to stop using their cars. The modal shift will also be facilitated by urban development. Re-using lines to install the *tramway* platform will modify the environment, with part of it being grassed over; the re-used lines will be shared with vehicles and with active modes (a separate path for cycles protected from traffic and public provision of secure bike shelters). That should give rise to less urban traffic and an improvement in walkability. The modal shift to active forms of mobility (bicycles, walking, and public transport) is beneficial to health, thanks to the physical activity that it leads to (see 4.1).

- The T8 *Sud* should have varying forms of impact on the components of the **social and cultural capital** determinant. It would have a positive impact on family relationships due to the time saving that it offers, particularly for working people travelling from home to work. The T8 *Sud* has a mixed impact on the social network. The T8 *Sud* at Saint-Denis, in particular, has the aim of opening up social housing areas (especially the Franc-Moisin and Bel-Air neighbourhoods), by linking those neighbourhoods to the town centre. In theory, that should contribute to opening up and diversifying the social network of residents. Sociological research shows that the social network of poor households is essentially concentrated at a local level and makes particular calls upon family and friends. The T8 *Sud*, without having any negative impact, may not have an effect on the opening up of the social network. However, by making it easier to travel to adjoining neighbourhoods and thanks to related urban rehabilitation (landscaping measures), the T8 *Sud* favours social cohesion, as expressed by the residents. Social cohesion represents the same type of effects on health as the social network, through sources of information, standards of behaviour, and collective effectiveness in solving problems.

- The T8 *Sud* would have a positive impact on determinants linked to **accessibility** to functions and services: work, education, health, administrative services, and basic essential items, as well as cultural and leisure services. It would have a positive impact on access to work thanks to improvements in travel conditions and to the links of the T8 *Sud*. That impact will benefit to people working in Paris, who are already better favoured by the existing offer, as well as people working in the suburbs, who may be able to benefit from the more reliable connection with other lines that are part of the current and future Île-de-France network (line 15 of the Grand Paris Express). Those new possibilities would allow for an enlargement of the job search area for job seekers (young people, poorly-qualified people, and women), as well as service times, especially for women. The T8 *Sud* would have a positive impact on access to education. It will run to various schools and colleges, as well as higher-education establishments (IUT– University Institute of Technology), the Condorcet Campus, and P13 University) and training establishments. For young people and for people undergoing vocational training, that ease of access will contribute to reducing stress and fatigue in the short term, and to an overall improvement in physical and mental health in adult life. The T8 *Sud* would have a positive impact on access to the health service. It will offer a direct service to a hospital and outpatient facility in Saint-Denis, the Daniele Casanova Hospital (an annexe to the Delafontaine Hospital), and it will offer ease of access to local medical services. Access to local services (basic essential items), administrative services, and cultural and leisure services will be improved. To have access to basic essential items and to food in particular, residents must use public transport for financial reasons: going to the shop where the product is cheapest and best suited to their nutritional habits.

- The T8 *Sud* would have a range of impacts on the determinants, linked to **economic development**. A mixed impact can be expected on job creation to the benefit of the local area's inhabitants, given their level of qualification. Job creation has a strong impact on health; it enables social inclusion, and it improves the social network and social support (emotional and practical support). The T8 *Sud* would have a mixed impact on the setting up of businesses for the Franc Moisin neighbourhood. Moreover, that neighbourhood is the subject of an urban renewal project, and the inhabitants expect the neighbourhood to be developed, with more commercial services in particular (laundry, shops, etc.) The existence of local businesses is important to give life back to their neighbourhood and to reduce the feeling of insecurity. The T8 *Sud* will support the economic development of joint development zones along the southern part of the line (from the Îlot des Droits de l'Homme to Porte d'Aubervilliers). That economic development entails the risk of differentiated development of amenities and economic activities for the benefit of joint development zones to the south and to the detriment of the areas near the Franc Moisin neighbourhood. The longer-term progression of the process of economic development towards the north may lead to a process of gentrification, with the risk of displacing populations to the periphery. The impact on health would be strong, and may increase the risk of worsening physical and mental health in the medium to long term (see 4.1).

- The T8 *Sud* would have a different impact on **mobility factors**. There will be a positive impact on physical ability from the T8 *Sud*, the new carriages of which will comply with the standards required by the law of 11 February 2005 on disabled people. The T8 *Sud* would enlarge the mobility area of people with reduced mobility, and would thus improve access to services (health, administrative services, education, etc.) by fostering social links, with different determinants acting, in the short and long term, on physical and psychological health. For the ability to pay and cognitive and cultural skills, the questions raised in relation to the TN (see 5.1), regarding difficulty in accessing the social fare structure of public transport and the problems of migrant women, are posed with particular acuity for the residents of the neighbourhood.

- The T8 *Sud* should have a positive impact on the **physical environment**. Regarding atmospheric pollution, the T8 *Sud* would contribute to reducing it by a range of mechanisms. On the one hand, the T8 is a non-polluting form of transport, because it uses electric traction. On the other hand, the advent of the T8 *Sud* would enable a modal shift from private cars to active modes of transport (walking and cycling) and to public transport, reducing road traffic and the resulting pollution. The T8 *Sud* would have a positive impact on noise. According to the environmental impact study, its noise contribution would come within the regulatory objectives by day and by night, thus not needing any compensatory measure. In addition, the reduction in road traffic linked to the modal shift made available to the *tramway* would further reduce the noise level. Finally, according to the environmental impact study, the level of vibrations and of electromagnetic waves caused by the T8 *Sud* would not have an impact on the health of users or of people living along the route.

## 5.3 SAINT-DENIS PLEYEL STATION

The Saint-Denis Pleyel Station project has been broken down into three parts in the context of this study: the station area, the chain of journeys linked to the station, and urban development in the station neighbourhood.

### 5.3.1 THE STATION AREA

- **Transport characteristics**: Given the current travel conditions in Île-de-France, the project should have a positive impact on travellers' comfort. Elements relating to comfort in the station and that are likely to increase the physical and psychological wellbeing of future users also refer to the area (avoid perceptions of over-occupancy), a certain level of calm (acoustic surroundings), air temperature and quality, and cleanliness. Planned arrangements for sales and ticketing at Saint-Denis Pleyel Station rely on the development of information and communication technologies. The ease of use and expected time saving for users would have the consequence of improving psychological wellbeing and reducing stress. A negative impact on various people (particularly people with sensory difficulties and persons with reduced mobility) may occur if the recommendations linked to the methods of analysing needs are not taken into account.
  The conditions for reception at the station are not currently known, particularly services provided by a human presence as opposed to automated services. According to the "welcome charter" that will be set up by the future operator, the impact of station reception on the wellbeing of various people may be positive or negative. On public transport, information given to travellers is provided mainly in two ways: sound (over loudspeakers) and vision (using screens). The SGP Strategic Committee "Stations" Working Group acknowledged that users have multiple expectations, which include both human contact and the use of new technologies. That allows us to anticipate that consideration will be given to the needs of various types of user, and that there will be a positive impact on psychological wellbeing.
  An additional point of vigilance concerns the digital divide. It is possible to anticipate a negative impact on access to information by people experiencing difficulties with ICT. With this there may be an inequality of access to the transport network, which may restrict the mobility of those people, with indirect consequences for their quality of life, their wellbeing, and their health.

- **Security**: Saint-Denis Pleyel Station is located in a local area where users express feelings of insecurity aboard public transport. The question of security affects all members of the public, particularly travellers and people living along routes. The Société du Grand Paris indicates that it has anticipated those challenges for the Saint-Denis Pleyel project, in particular by setting up a collaboration with a police station. Architectural, acoustic, and visual solutions that are due to be installed will rely on recent experience and knowledge, so they should have a positive impact on the feeling of security.
  Setting up the managing of security challenges via various forms of dissuasion may have a positive short-term impact on economic stakeholders, who will consider setting themselves up as part of the GPE Metro station project. However, when developing the station project, the omission of long-term social targets may have a negative impact on various members of the public, who have concerns regarding successful co-existence within the station and its neighbourhood (businesses, employees, and residents), and may reinforce mutual defiance, and with it the feeling of insecurity and associated stress. Conversely, putting in place innovative solutions in connection with specialist stakeholders (the social sector and the health sector) for dealing with problems relating to people wandering around the station and using or trading in drugs, would have a positive impact on sharing the uses of a public area, which will be used by different types of people.

- **Economic development**: The list of specifications for the new Grand Paris stations plans a new offer of businesses and services, to simplify daily life for travellers and local people. That offer is complementary to the current commercial offer, not in competition with it. However, the development's impact will vary based on the members of the public (residents or people who are passing through), depending on the type of offer (does it meet a need?) and the price of that offer (can residents afford it?) The "in-station" catering offer will have positive or negative impacts on health, based on the type of offer. An offer based on fast food, will have a negative impact on users' health. A catering offer that follows the PNNS's (National Nutrition Health Plan) recommendations will have a positive impact on the health of various members of the public.
  The offer in terms of "in-station" businesses, catering and services should have a positive impact on the residents of the Pleyel neighbourhood, and more widely on the town of Saint-Denis as well as Plaine Commune This will be the case if consideration is given to the potential for developing existing activities in the local area (micro-businesses), the variety of its cultural characteristics (e.g. showcasing a varied local culinary offer), and the existence of local labour with a range of qualifications (unqualified jobs, apprenticeship contracts, jobs for students, etc.). If those multiple potentials are not taken into account and assessed, an increase in inequalities is expected, with the full set of negative consequences, both direct (on social cohesion and "living well together") and indirect (with worsened health).

- **Mobility factors**: Grand Paris stations are designed for ease of travel for all travellers, and to take into account the full range of disabilities. Furthermore, the expected date for bringing Saint-Denis Pleyel Station into service (2023) means that all the measures planned by the law of 11 February 2005 will be in place. Heavy measures affecting the built environment, in order to remove impediments to travel (vertical traffic flows using lifts and horizontal traffic flows with 5% ramps and routing), and light measures, to facilitate orientation and the quality of use (materials, visual signage, auditory signage), will have a positive impact on mobility factors affecting various members of the public.

### 5.3.2 TRAVEL CHAIN

- **Transport characteristics**: Saint-Denis Pleyel Station is a major connecting hub for future GPE Metro lines. It will be the entrance to the Île-de-France network, and will stimulate the whole travel chain. The speed of travel (a commercial speed of 65km/hr) and the frequency of the GPE Metro service (every 2 minutes at peak times at Saint-Denis Pleyel) will have a clear positive impact on the cost in time of travels in Île-de-France, which will have a short-term effect on physical and psychological wellbeing. In combination with the other dimensions of comfort, those transport characteristics may have a long-term positive impact on the overall health of people in Île-de-France, and, more specifically, the residents and users of the area.

- **Safety**: Depending on the country, the use of public transport is between 10 and 20 times safer than by car (per passenger kilometre carried). The GPE Metro, based on the expected modal shift (a 1.3% fall in car journeys across the region) and the fall in car congestion (expected reduction of 2.1%, i.e. 57km), will have a positive impact on journeysafety (number of accidents) with an associated fall in morbidity and disabilities.

- **Physical activity**: Through access to the GPE Metro network and the modal shift from cars to public transport, the station project will have a positive impact on physical activity. By increasing the amount of physical activity in one day, the use of public transport contributes to reducing the incidence of obesity and the incidence of chronic illnesses. Studies done in Île-de-France and Canada have shown that users of urban public transport have a level of physical activity that is higher than that of car users. However, the station project will only have a long-term positive impact on physical activity if associated urban development measures are put in place that allow active modes of transport (walking and cycling) to be used, in conjunction with public transport.

- **Social and cultural capital**: Through the associated travel chain, the Saint-Denis Pleyel project may have a positive impact on certain dimensions of the social and cultural capital. Due to the reduction in journey time, the project may have a positive impact on family relationships. However, the GPE Metro does not represent local public transport, so a weak positive impact is expected on the social network and on social cohesion.

- **Access**: Access to the GPE Metro at Saint-Denis Pleyel Station will have a positive impact on access to a widened employment catchment area (geographically and quantitatively). Reducing unemployment has an impact on reducing morbidity and mortality, better recovery after ill health, and an overall improvement in physical and mental health. For many people, public transport is a major determinant of the quality of life, by facilitating access to places of study, work, leisure, and health. That encourages insertion and full participation in society.

- **Mobility factors**: Saint-Denis Pleyel Station will be a major connection point for the GPE Metro and the entire Île-de-France network. To ensure that routes are clear and swift, the design of Grand Paris stations seeks to follow an organisational model that is effective and tailored to the particular characteristics of the entire network. Connections form a major challenge in the perceived level of difficulty of public transport, even more so for people who are elderly, carrying items, disabled, in a group, or with children. Time spent walking or waiting for a means of transport is perceived as between two and five times longer or "more expensive" than the time spent on board. The expected impact of Saint-Denis Pleyel Station on the various mobility factors will depend on the manner in which the exchange cluster is developed, with a view to limiting the constraints experienced. That potential perception of difficulty gives rise to fatigue, stress, and anxiety. If the exchange cluster is designed to limit constraints experienced by users, and if travel comfort for various types of traveller is taken into consideration in designing connections, those perceptions of difficulty will be attenuated.

#### 5.3.3 URBAN DEVELOPMENT

- **Physical activity**: Saint-Denis Pleyel Station will have a positive impact on physical activity if the link between the station project and the urban project allows for and organises appropriate urban development, which offers an incentive to encourage daily physical activity. Incorporating cycle routes encourages the population to use them. Transport-organising authorities now have skills in terms of alternative modes of transport (self-service bicycles, car-sharing, car-pooling, intermodality between cars and public transport) and parking. That decision should have a positive impact on joint planning between the area immediately around the station (which comes under the responsibility of the STIF and the SGP) and the wider perimeter of 500m to 800m, which comes under the responsibility of the local authority. That should facilitate development of active mobility and have a positive effect on health.

- **Social and cultural capital**: The project will have a positive impact on the social and cultural capital of the Pleyel neighbourhood if sufficient attention is paid to integrating the station into the neighbourhood. Stations must be designed in close collaboration with redesigned roadways, public areas, and accessibility of other modes of travel, as well as neighbouring facilities and businesses. Given its current characteristics (a neighbourhood in which business offices predominate, with high-rise buildings, and artificial ground surfaces that leave limited space for plant cover), defining the station's role in its local area appears as an essential condition for developing the best future functioning of the neighbourhood for the benefit of residents and future employees. The station can also have a negative impact on the social and cultural capital of the neighbourhood if the specific needs of inhabitants (local businesses and services in particular), their way of life, and their way of appropriating public areas are not taken into consideration far upstream. That negative impact would have indirect effects on health.

- **Access**: The Pleyel neighbourhood suffers from an urban divisions that cuts it off from the Landy neighbourhood. Urban divisions have consequences that go beyond extending journeys; they also affect social relations and urban functioning as a whole. Taking specific account of that urban area by the station project on a combined basis with the urban planning may have a positive impact on mobility between the two neighbourhoods, especially for pedestrians and cyclists. Furthermore, it would enable residents to have increased accessibility to a range of services (local businesses and services as well as health and administrative services). Depending on the type of economic development and services associated with the urban planning for the Pleyel Station neighbourhood, that may lead to better physical and mental health (perceived and objectivised opening-up, increased access to local services, and accessibility to the station).

- **Economic development**: The "head of network's" urban project aims at creating a new central point in the multipolar system of Plaine Commune, without creating a second town beside the historic town. The aim of the urban project is to create better links between the various development sectors (Saint Ouen, Saint-Denis, and L'Île-Saint-Denis). It should allow for the economic development of the neighbourhood and encourage job creation as well as developing the offer in respect of leisure, educational, sports and cultural facilities. That economic development may have a positive impact on the neighbourhood's residents through improvements in social inclusion, social networks, and social support, with an effect on health, particularly for people who are the furthest away from work. That positive impact on health would favour an overall improvement in the physical and mental health of the neighbourhood's residents and of employees, as well as better recovery after a health problem.

  That economic development may also have a negative impact on the neighbourhood's residents. Embellishing and renewing the urban area would enable an environment to be developed that is in line with the aspirations of the newcomers (which are better off financially, socially, and culturally), leaving the neighbourhood's inhabitants unable to deal with the consequent rise in property prices. People who are in the greatest financial difficulty may be forced to move away from the neighbourhood that is the "head of the network" and experience difficulties in accessibility (to jobs, services, and leisure), that may prejudice their full participation in the life of the area and, indirectly, their health.

## 5.4 SUMMARY OF POTENTIAL HEALTH IMPACTS

The potential health impacts, which have just been described separately, can be regrouped to improve their overall understanding.
The table 5-4 summarizes the health impacts and the most affected population groups.

### 5.4 Comparison of health impacts per project

| Effects of the project | Health impacts | Most affected groups | Tangentielle Nord | Tramway T8 Sud | Gare Saint-Denis Pleyel |
|---|---|---|---|---|---|
| **Modal shift PV-PT (air)** | Reduction in respiratory and cardiovascular diseases, lung cancer risk, mortality and neurodevelopmental cognitive disorders | Local population | ★★★ | ★★★ | ★★ |
| **Modal shift PV – active modes**<br>**Sports' equipment access** | Reduction in overweight issues, obesity, type II diabetes risk, cardiovascular risk, some cancers overall mortality and improvement in mental health | Pedestrians, cyclists | ★ | ★ | ★★ |
| **Modal shift PV-PT (accidents)** | Reduction in disability and death | Pedestrians, cyclists | ★★ | ★ | ★★ |
| **Acoustic screens, Modal shift PV –PT (noise)** | Reduction in stress, discomfort and improvement in sleep | Residents | ★★ | ★ | - |
| **Improved mobility, access to services** | Reduction in mortality, access to health care, better recovery after health problems and an improvement in mental health | Young people, unemployed people, low-skilled people and women | ★★★ | ★★★ | ★★★ |
| **Comfort, reliability, frequency,** | Reduction in fatigue, stress and psychosocial problems | Working people, students | ★★ | ★ | ★★★ |
| **Security systems** | Improvement in physical and psychological well-being and a reduction in fatigue and stress | Public transport users | ★★ | ★ | ★ |
| **Gentrification**<br>**Unequal access to mobility (ability to pay, cognitive ability)** | Discomfort and physical and psychological degradation | Demographic groups with socio-economic difficulties | ★★★ | ★★★ | ★★ |
| **Transport environment, Information** | Physical and psychological distress and stress | Public transport users<br>Migrants, immigrant women (language, cognition)<br>Populations penalized by the digital divide (age, economic, cultural background) | ★★ | ★★ | ★★ |
| **Hours of services** | Increased fatigue and stress | Working people with staggered hours. | ★ | ★ | - |

Key: Intensity of the health impact: ★: low ★★: average; ★★★:high.
PV: personal vehicle - PT: public transport

# 6. RECOMMENDATIONS

Based on the assessment of impacts and their prioritisation, recommendations have been drawn up that aim to encourage or reinforce the project's positive impacts on health, and to attenuate potential negative impacts. General recommendations that are common to the three projects are presented afterwards. Potential health benefits that are expected in the short or long term are indicated in parentheses at the end of each recommendation.

*A detailed presentation of recommendations is available in the full report.*

## 6.1 THE *TANGENTIELLE NORD*

### 6.1.1 INCREASE TRANQUILLITY FOR LOCAL PEOPLE

The effectiveness of the 13km of planned acoustic screens must be checked technically and through interviews with residents exposed during the first six months of service.

*(Expected health benefits: reduced stress, reduced barriers to communication, and improvement in sleep.)*

### 6.1.2 INCREASE PHYSICAL ACTIVITY IN URBAN JOURNEYS AND LEISURE ACTIVITIES

The public area around stations should be rehabilitated to encourage active modes of travel, thanks to facilities that encourage walking for all and safe cycle routes. The amount of parking around stations should be limited. Access to Butte Pinson Park and George Valbon Park should be facilitated through urban developments (rehabilitating paths and signage), to encourage walking for all, cycling, roller-skating, etc. The feasibility of a green belt running the length of the TN to encourage walking for all, cycling, roller-skating, and running should be studied.

*(Expected health benefits: reduction in excess weight and obesity, reduction in the risk of type 2 diabetes, cardio-vascular disease, certain cancers, and general mortality, and improvement in mental health.)*

### 6.1.3 INCREASE LIFESTYLE BEHAVIOURS THAT ARE FAVOURABLE TO HEALTH

Local businesses should be encouraged to open up around TN stations by giving priority to food outlets that have a good level of healthy nutrition (fresh fruit and fresh vegetables). Local know-how should be used to encourage caterers, mobile units offering traditional food and restaurants offering world foods.

*(Expected health benefits: reduction in the risk of obesity, prevention of cardio-vascular diseases, cancer and type 2 diabetes.)*

#### 6.1.4 IMPROVE THE FEELING OF SAFETY ON PUBLIC TRANSPORT

Environmental conditions should be more human in the stations with the presence of multifunctional staff (ticketing, information, help in using machines, etc.). In TN stations and in some carriages, there should be social mediators available to guarantee respect for civic rules, prevent problems and manage minor conflicts. The chosen security arrangements (lighting, video surveillance, alarm terminals, etc.) should be strengthened. The atmosphere on board should be lightened by having drivers make humorous announcements regarding civic behaviour, or by having a radio service that offers a mix of information and music.

*(Health benefits expected: physical and mental wellbeing, reduced fatigue and stress.)*

#### 6.1.5 REDUCE MOBILITY INEQUALITIES

Effective drawdown of transport lines to TN stations in line with hours of operation during the week and at weekends should be ensured. Universal design or design for all (items, urban furniture, and signage usable by all) should be tried out on approaches to the station and in the transport area, in order not to discriminate against persons with reduced mobility.

*(Health benefits expected: reducing the impact of disabilities, preventing deterioration of physical and mental health.)*

#### 6.1.6 REDUCE THE RISK OF DETERIORATION FOR TRANSPORT AREAS

A "Adopt a Station" programme should be initiated in TN stations to encourage the appropriation of the areas by residents and users, using local artists for decoration (frescoes, etc.), organising temporary exhibitions and wandering shows.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

#### 6.1.7 REDUCE THE FREQUENCY OF DISCOURTESY / ASSAULTS ON PUBLIC TRANSPORT

Messages should be adapted to raise awareness of best practices for users and of civil attitudes on public transport by using games that are accessible to all audiences, and by working with inhabitants to refine the messages. SNCF intervention programmes should be strengthened in schools in municipalities that are connected by the TN.

*Expected health benefits: physical and mental wellbeing, stress reduction.)*

### 6.2 THE T8 *SUD TRAMWAY*

#### 6.2.1 INCREASE PHYSICAL ACTIVITY IN URBAN TRAVELS

Urban areas should be developed to encourage walking for all and safe cycling, by rehabilitating routes (with cycle routes that are separated from traffic), and by setting up facilities for secure cycle parking at *tramway* stops. Working with the population to organise a system of information panels that can be understood by all should be implemented, allowing inhabitants and visitors to go easily on foot or by cycle to the neighbourhood's places of interest.

*(Health benefits expected: reduction in weight and obesity, reduction in the risk of type 2 diabetes, cardio-vascular disease, certain cancers, and general mortality, and improvement in mental health.)*

#### 6.2.2 INCREASE THE FEELING OF SECURITY IN THE PUBLIC AREA AROUND THE TRAMWAY

The *"Marche Exploratoire des Femmes"* ("Women's Exploratory March") initiative should be implemented to enable women to be stakeholders in their own security by helping them to re-appropriate public areas. The initiative is a participatory one that crosses the generations. After a precise diagnosis in the field, it offers recommendations to local decision makers in the context of long-term action.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

#### 6.2.3 INCREASE THE USE OF PUBLIC TRANSPORT

Before the *Tramway* is brought into service, residents should be provided with information on the reorganisation of the local network (restructuring the bus network), using a range of actions: standard communication campaigns as well as mobility workshops and appropriation walks with associations based in the neighbourhood.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

#### 6.2.4 IMPROVE ACCESS TO HEALTH FACILITIES

The accessibility of health centres and health establishments across the local area needs to be ensured, either directly by structuring lines or by drawdown.

*(Health benefits expected: better recourse to care, reduction in morbidity and mortality.)*

#### 6.2.5 IMPROVE SOCIAL COHESION

Relationships between the residents of different neighbourhoods should be encouraged, in order to fight against being cut off and against social isolation. This can be achieved by working with the *Tramway* through inter-neighbourhood meetings at dedicated venues (cultural centres), shared activities (gardening, harvesting, small farms, etc.), and sports activities such as basketball and handball tournaments, using mobile courts that can be transported form one neighbourhood to another.

*(Health benefits expected: physical and mental wellbeing.)*

#### 6.2.6 REDUCE FRAUDULENT BEHAVIOUR

In *Tramway* stations and carriages, the information for users on entitlements to reduced fares and free travel should be improved. This can be done by using messages that can be read and understood by all; measures that are additional to information provided as part of actions to raise awareness and to provide support for mobility, and that are carried out as close to residents as possible (PIMMS points, etc.) (see general recommendations).

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

#### 6.2.7 REDUCE ASSAULTS / DISCOURTESY ABOARD THE T8 SUD

The RATP's campaigns "against discourtesy" should be developed for the surface network, by tailoring the messages to the particularities of the local area and by involving the residents.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

#### 6.2.8 CONTROL THE NEGATIVE EFFECTS OF GENTRIFICATION

To prevent the negative effects of gentrification, ensure that new accommodation contains a 40% share of social housing; implement an "exceptional" property strategy to produce housing that is ac-

cessible to all and to maintain a mixed, diversified economic fabric.

*(Health benefits expected: prevent the risk of deterioration of physical and mental health linked to the process of socio-urban segregation.)*

## 6.3 SAINT-DENIS PLEYEL STATION

### 6.3.1 DESIGN INFORMATION AND SIGNAGE SYSTEMS THAT ARE ACCESSIBLE TO ALL

The principle of interactive Metro maps (using touch screens) that can be used by a range of audiences should be taken up. Signage systems should be produced by involving the various audiences to achieve universal accessibility. The information system should be diversified in terms of support and content, so that it can be used by all audiences. Working with local stakeholders should act on inequalities of access to ICTs, using actions to raise awareness and to offer training, with the aim being digital inclusion.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

### 6.3.2 LIMIT THE RISK OF DISCOURTESY BY MEANS OF A HUMAN PRESENCE AND A CODE COVERING USE OF THE PREMISES

A code should be created for using the premises by developing areas and through signage. Ensure a human presence at the station to make the environment more human and to help users to apply the rules for sharing the area. Arranging for social mediators who ensure respect for civic rules, prevent problems, and manage minor conflicts would be advisable.

*(Expected health benefits: physical and mental wellbeing, stress reduction.)*

### 6.3.3 IMPROVE THE FEELING OF SAFETY VIA INTERIOR DEVELOPMENT OF THE STATION, INVOLVING THE RESIDENTS

The challenges of prevention and of security should be incorporated into the design of buildings and areas (re-vegetation). It is advisable to design open inner areas with light, reduce corners and encourage acoustic and light environments. An “Adopt Your Station” programme should be initiated to develop appropriation of the station by the residents from the neighbourhood. This could involve collective participation in decorating the station, contributions from local artists, a living-art platform in relationship with local associations and local culture.

*(Health benefits expected: physical and mental wellbeing, stress reduction.)*

### 6.3.4 ENCOURAGE A MODAL SHIFT TO PUBLIC TRANSPORT AND ACTIVE MODES OF TRANSPORT

Effective drawdown of public transport to the station should be ensured. Parking should be limited around the station, organising a drop-off / pick-up area, therefore increasing the ratio of underground parking spaces for new accommodation or offices. Actions designed to provide communication and to raise awareness should be developed in order to encourage a modal shift. Exemplary intermodality in the station should be organised by developing areas that are safe, legible, and comfortable. This can be achieved via co-ordinating the timetables of the various forms of public transport, co-ordinating fares and a common ticketing system, so that the same ticket is valid across the various transport companies serving the station; a multimodal information platform. Urban development should be reorganised within a radius of 800m to 1km around the station, to encourage a space shared by all: pedestrians, cyclists, persons with reduced mobility, with traffic calming (30km/hr zone, etc.). Signage should be set up using information panels that are accessible to all, and that present points of interest around the station, with walking and cycling times.



*(Health benefits expected: reduction in weight and obesity, reduction in the risk of type 2 diabetes, cardiovascular risk, some cancers, and general mortality, and improvement in mental health.)*

### 6.3.5 IMPROVE SOCIAL COHESION IN THE PLEYEL NEIGHBOURHOOD THANKS TO THE QUALITY OF PUBLIC AREAS

“Share the Street” initiatives should be organised to find out the expectations and needs of people who live and work in the Pleyel neighbourhood regarding: the attractiveness of active modes of travel and the quality of public areas, enabling people to “live together”. The re-vegetation of the neighbourhood should be developed (shared gardens on roofs or terraces).

*(Expected health benefits: physical and mental wellbeing,)*

### 6.3.6 ENCOURAGE ACCESS FOR ALL TO THE LANDY-PLEYEL CROSSING

Between the two neighbourhoods, the flow of the various modes of travel should be improved and an open-air, step-free crossing for pedestrians and cyclists should be maintained, with the use lifts or ramps to facilitate journeys by persons with reduced mobility.

*(Health benefits expected: reduced negative impact for disabled people, improved access to care, better recovery after ill health, improvement in mental health, and reduction in mortality*

### 6.3.7 ASSESS THE POTENTIAL NEGATIVE EFFECTS OF GENTRIFICATION IN THE PLEYEL NEIGHBOURHOOD

A strategic assessment of the risk of gentrification in the Pleyel neighbourhood should be undertaken. Tenant stability should be ensured and access to property encouraged. A property budget should be anticipated and mobilised in the context of the strategic property plan, and a joint development zone used to pursue the operations to develop the neighbourhood to produce an affordable-housing offer.

*(Expected health benefits: prevent the risk of deterioration of physical and mental health linked to the process of socio-urban segregation.)*

### 6.3.8 USE THE SETTING UP OF BUSINESSES AND SERVICES TO ENCOURAGE THE DEVELOPMENT OF LIFE IN THE NEIGHBOURHOOD

A study of commercial-offer needs should be carried out in the Pleyel neighbourhood before drawing up the list of specifications for business offers in the station area. Priority should be given to an offer involving local businesses and services outside the station. In the context of the commercial offer as a whole, the list of specifications for fast food should meet healthy-eating criteria. The availability of fresh products around the station (mobile outlets with producers’ markets) should be encouraged. The presence of businesses set up by the local population (community cafés and catering, etc.) should also be encouraged. Price levels should be guaranteed that are compatible with the standard of living of the neighbourhood’s residents.

*(Health benefits expected: physical and mental wellbeing, reduction in the risk of obesity, cardiovascular diseases, cancer and type 2 diabetes.)*

### 6.3.9 PREVENT THE PHENOMENON OF URBAN HEAT ISLANDS

A study to identify urban heat islands and their health consequences in the Pleyel neighbourhood should be carried out. The development of cool areas by increasing the presence of plants and by giving priority to water should be encouraged.

*(Health benefits expected: improvement in physical and mental health, reduction in mortality.)*

## 6.4 GENERAL RECOMMENDATIONS

### 6.4.1 INCREASE MOBILITY SKILLS

An awareness-raising campaign and support for equitable access to mobility in multiservice areas as close as possible to residents (mobility projects, skills acquisition, raising awareness of active mobility, etc.) should be organised.

*Health benefits expected: physical and mental wellbeing, stress reduction.)*

### 6.4.2 REDUCE FINANCIAL BARRIERS TO ACCESS TO PUBLIC TRANSPORT

In Île-de-France, the public-transport social fare structure, based on social status, should be changed to a fare structure based on income. Procedures should be revised, adjusted and simplified for accessing reduced fares on public transport. A process of considering an integrated commercial fare structure for various modes should be integrated.

*(Health benefits expected: physical and mental wellbeing, better access to care, overall improvement in physical and mental health and a reduction in mortality.)*

### 6.4.3 INCREASE ACCESS TO WORK THROUGH NEW PUBLIC-TRANSPORT OPPORTUNITIES AND BY DEVELOPING THE RELATED ECONOMY

The local area residents should be able to benefit equitably from new public-transport possibilities and to have access to a wider jobs market, by helping those who are most in difficulty with regard to mobility skills. Recruitment from the local jobs market should be encouraged by reinforcing the partnership between National Education, the regional council and local businesses, and by increasing the level of mastery of French to improve insertion and professional promotion. The employment of people from the local area to develop local economic activities is to be encouraged.

*(Health benefits expected: an overall improvement in physical and mental health, a reduction in mortality, and better physical and mental health in young people of adult age.)*

### 6.4.4 INCREASE CIVIC PARTICIPATION IN PROJECTS THAT CONCERN RESIDENTS

The population should be involved in setting up and monitoring projects on a systematic basis. Civic participation should be a condition in partnership agreements. Participation groups across several generations should be formed to monitor projects over a long period.

*(Health benefits expected: overall improvement in physical and mental health.)*

### 6.4.5 IMPROVE CO-ORDINATION OF PUBLIC POLICIES

Links between transport policies and social policies should be encouraged at all levels (encouraging innovative local initiatives, appointing people qualified in social policy to management boards, and developing joint working between central administrations). A link should be set up between transport policy and public-health policy in order to take into account the effects in the long term.

# 7. CONCLUSIONS

The Plaine Commune transport projects studied in this HIA are set in a local area that is lacking in public-transport networks. The residents suffer from low public-transport availability, particularly in the north of the area, as we were able to observe for the towns of Stains and Villetaneuse. All transport projects currently being developed in the local area aim to bridge the gap between Plaine Commune (and, more generally, the northern suburbs) and Paris. There are projects that have been part of the SDRIF (Île-de-France Regional Master Plan) for a number of years, particularly the *Tangentielle Nord* and the T8 *Sud Tramway*. In addition, the Grand Paris Express, through Saint-Denis Pleyel Station and its associated Metro lines, should play a big role in that improvement. For Plaine Commune, it was important to assess the impact of the new forms of public transport on the residents' health as well as on equal access to mobility. For the Regional Health Agency, testing the procedure for assessing impacts on health for a significant development project and for a local area with growing inequalities, offered an interesting opportunity. The Regional Health Observatory was part of this assessment.

## 7.1 THE LESSONS FROM THE HIA AT PLAINE COMMUNE

The Plaine Commune HIA leads us to make a few comments on the contributions drawn from this first attempt at an HIA in Île-de-France.

It included three projects, which may seem ambitious for an initial assessment within a limited timeframe. Those three projects, amongst the 40 developed in the local area, nonetheless presented overall consistency and covered the area well. They illustrated the challenges of future mobility for Plaine Commune: a suburb-to-suburb link to open up and develop the north of the area, a local service to link areas of social housing to the town centre and the approaches to Paris and a new central hub that would offer access to the Grand Paris Express. Thanks to the spatial distribution of the projects, it was possible to meet residents from different parts of the local area, and an overall vision of the challenges of travel could be developed.

The HIA allowed another vision of health to be shared with the members of the steering committee and was able to make them aware of determinants of health based on a wide-ranging socio-environmental model. That appropriation was built up gradually during the whole life of the study.

The HIA offered an opportunity to inform members of the COPIL of the residents' perceptions who were most remote from joint-working arrangements and most vulnerable in respect of transport and its aims (access to work, education, services, leisure, etc.). The most vulnerable groups could be identified thanks to their population profile, focus groups, and an analysis of the literature on the link between transport and health.

The HIA has highlighted the projects' potential effects on the health and wellbeing of residents and employees who are not resident in the local area; those effects can be direct or indirect. The same type of impacts on health was raised in all three projects, but sometimes with different intensities. Those

positive or negative effects could arise in the short term, in respect of respiratory problems, stress, fatigue, anxiety, or psychological wellbeing. They could also arise in the medium to long term, with more significant effects on health over time: excess weight, obesity, respiratory and cardio-vascular pathologies, lung cancer, mental health, disabilities, and death. Different potential impacts were assessed for certain population groups, and that led us to target recommendations.

Recommendations drawn up after the impact assessment were discussed with all the stakeholders in meetings of the Steering Committee, then with each stakeholder individually in its institution. Those bilateral meetings enabled meetings to be held with other stakeholders in the same field, and exchanges on actions carried out by those institutions, thus enabling us to adjust our recommendations.

Finally, this HIA gave a voice to groups of residents and initiated a process of empowerment on the questions of the link between transport and health. Through associations, people with different profiles (young girls from families in difficulty, women undergoing socialisation through language, job seekers, inhabitants of areas of social housing, and students) were able to express themselves in focus groups. They had the opportunity to think and to hold exchanges on the potential positive and negative effects of the new projects on their wellbeing and on their living conditions. Their opinions were taken into account in assessing the impacts and in drawing up an initial set of recommendations. Thereafter, they were able to take part in jointly drafting some recommendations.

## 7.2 THE CONDITIONS FOR PUBLIC TRANSPORT TO CONTRIBUTE TO REDUCING HEALTH-BASED SOCIAL INEQUALITIES

An overall look at the three projects allows salient common points to be highlighted, and emphasis to be given to the most important recommendations for reducing health inequality across the territory of Plaine Commune.

1 **Raise the population's awareness of the benefits of the modal shift for the environment and for their own health**: Plaine Commune is a disadvantaged area in matters of environmental nuisances. The A86 and A1 motorways cut across the territory, causing dense road traffic and noise black spots (dense rail traffic, the airports at Le Bourget and Roissy – Charles de Gaulle) generate atmospheric pollution and noise nuisances. Residents of the Outer Paris area refer to noise on a significant basis, but atmospheric pollution was barely touched on by residents in focus groups. However, the potential impacts on health are direct and major. A fall in atmospheric pollution can lead to a fall in respiratory and cardio-vascular pathologies, as well as a fall in the risk of lung cancer and mortality rates. Urban noise reduction contributes to stress reduction, as well as a lowering of barriers to communication and an improvement in sleep. Finally, reducing accidents leads to reducing disabilities and deaths. That lesser perception by the population of the impact of public transport on the environment and health (air, in particular) must be worked on. In a disadvantaged area, it may be explained by an image of the private car valued as an enviable asset that permits genuine autonomy. Planned measures, such as the reduction in parking places, may incite people to undertake a modal shift, communication actions aimed at the general public and individuals on that modal shifts' benefits for health will have to be developed in mobility workshops, and credible travel alternatives must be put forward.

2 **Urban commitment must encourage active modes of travel**: Walking is used frequently by the residents of the three towns, but more out of need than by choice. It is not easy, because of the absence of tailored facilities (small pavements, parked vehicles, no safety with respect to road traffic, and urban divisions). Using a bicycle remains rare too. This is for reasons of urban planning (cycle paths are almost non-existent) and because of a fear of theft. The residents from the local area show a particularly high prevalence of excess weight, obesity and diabetes. In particular, nutritional habits and food insecurity are affected by poverty and are factors that have a major influence on those problems. However, exercise can contribute to fighting excess weight and obesity as well as reducing other pathologies (diabetes, cancer, depression, etc.). Rehabilitating routes within a radius of 800m around TN stations or Saint-Denis Pleyel Station favours active modes of travel (walking or cycling) and reinforces developers' intentions regarding development. Other recommendations to encourage physical activity are the outcome of discussions with the residents of towns in the north of the area. They include the possibility of setting up a green belt along the TN route, climbing walls outside stations, and facilitated access with signage to Butte Pinson Park (Villetaneuse, Pierrefitte) and George Valbon Park (Stains). The residents of the Franc-Moisin neighbourhood support the project involving information panels at transport connection points along the route of the T8 *Sud*; those panels will be put together jointly with the residents and will be understandable by all, enabling residents and visitors to go easily on foot to the neighbourhood's places of interest.

3 **Ensure equitable financial access to public transport**: That question cuts across the three projects. It was strongly discussed in focus groups with the residents, who pointed out the need for a three-zone travel card to cross Plaine Commune, whereas Parisians only need a two-zone travel card to reach jobs in Plaine Saint-Denis. For families in difficulty, the cost of transport is weighed up against the contents of the household food basket. In that context, fraud can become a strategy for financial survival. The assessment of the TST (Social Fare Structure for Public Transport) by the STIF shows non-use of the order of 25% to 50% by potential beneficiaries, depending on the status of the person, and taken across the whole region. In the three towns studied in the HIA, the number of TST beneficiaries stands at between 1.3 and 1.4 per 1000 residents, which is a very low figure compared with that from poverty indicators of the three towns. Reducing non-use by facilitating, simplifying, and making legible the procedures for accessing the TST, and basing the TST on individual income rather than on status (RSA- Earned Income Supplement, CMU-C – Universal Health Cover – Supplementary, etc.), are measures that would lead to better social inclusion of weakened populations and lessen fraud.

4 **Reduce the feeling of insecurity on public transport by partnership-based civic action**: The local area is characterised by delinquency indicators that are amongst the highest when compared with other Grand Paris areas. Violence (robbery, assault, degradation, etc.) occurring in neighbouring public areas can spread to public transport. Even if only a small fraction of users have been direct victims, the feeling of insecurity affects most of them and can restrict mobility, particularly in the case of young people or women at certain times. Various components of the projects studied will have potentially positive impacts on the feeling of security (developing station areas and platforms, lighting, video surveillance systems, etc.). In addition, a range of measures have been worked on with the population, such as the presence of social mediators (transport officials) in stations, and in some carriages, to prevent problems and to manage minor conflicts; making users aware by means of play–based messages (comic strips, videos, etc.) produced in conjunction with the population; appropriating station areas through an "Adopt Your Station" programme., which uses local artistic skills to develop the area (frescoes, etc.), and organising live wandering shows. An initiative tested in other towns in the region is the *"Marche Exploratoire des Femmes"*, which enables women of all generations to become stakeholders of their own security thanks to a re-appropriation of the public area around public transport (in the context of the T8 *Sud* project).

5 **Reinforce access-to-mobility skills**: Residents reported difficulties in getting around the Île-de-France public-transport network, due to problems of finding out where they were or mastering the language, thus having their travels constrained. Moreover, the development of information and communication technologies (ICTs), which are becoming ever more intensely used in the transport sector, can accentuate existing gaps in disadvantaged areas. To support those people in difficulty, the proposal to set up venues for raising awareness and providing support for mobility was considered essential by the residents. In addition, that type of information centre, with other functions relating to intermodality, should also be developed at Saint-Denis Pleyel Station, which is futuristic in ICT terms, for equitable access to mobility.

6 **Improve access to work for residents of the local area**: Of the residents of the three towns, one person is five is unemployed amongst people aged 15 to 64, with women being more affected than men. There is a significant gap between the socio-professional categories of the population and the employment provided across the local area. Those gaps are due in part to the training received by the residents, that training being more often focused on industry professions and poorly adapted to the increasing demand for tertiary jobs. The gaps are also partly due to low levels of academic success. Related economic development raises expectations of the insertion of the groups that are the most in difficulty into the new local economic activities that have been set up (businesses and services). For residents (and young people in particular) to benefit from the development of tertiary economic activity, it would be necessary to strengthen the partnership between businesses, National Education, and local authorities.

7 **Control the potential negative effects of gentrification by mixed, socially-cohesive development of development programmes associated with public transport**: The arrival of new forms of public transport to the local area brings a number of advantages for current residents (jobs, facilities and services, improvement in living conditions, etc.) The residents of the various towns or neighbourhoods also expect to see the life of their neighbourhood developed, with new businesses being set up. However, the residents of Carrefour Pleyel worry about the price of property and of being re-housed as part of those developments. Will they be able to pay? Will they have to move somewhere else, further away? Will economic activities be concentrated at the station, or will they be of benefit to residents by being set up in a balanced manner? Will functional diversity be respected, will the construction of offices be balanced against the construction of housing in order not to create a dormitory neighbourhood? Will the housing offer enable a social mix by keeping a significant proportion (40%) of housing for social tenants? The Franc-Moisin neighbourhood is undergoing renovation; in terms of facilities and services, will it be able to catch up with the new neighbourhoods that are being developed in joint development zones along the route of the T8 *Sud*? The HIA's proposals for controlling those risks reinforce the Plaine Commune Local Area Development Contract's aim of guaranteeing a housing offer that is tailored to specific audiences, controlling housing costs, and ensuring high-quality life in the neighbourhood. Those proposals also convey the fact that the challenges of public health are strongly linked to decisions regarding urban strategy.

The transport policy across Plaine Commune is aimed at two types of populations: the residents from the local area, and people who come to work in businesses that have been set up locally, or in the universities. Those two populations are very different in terms of social position and health problems. The aim of the HIA was to assess the impacts of the projects on health, as well as to reduce health inequalities. The results of the HIA suggest that positive or negative impacts on health will be more significant for residents from the local area than for employees. Amongst residents, population groups that are in greater difficulty may find that the inequalities from which they already suffer may actually worsen. The recommendations proposed in this HIA aim to limit that risk. The residents were greatly involved with this HIA; they will be able to take the recommendations that they feel are most important and present them to public authorities.

# LIST OF ANNEXES

# ANNEXE 1 :

## STEERING COMMITTEE AND ASSESSMENT TEAM

### STEERING COMMITTEE

**PLAINE COMMUNE**

- Patrick Braouezec, Chairman
- Jacques Marsaud, Director General of Services
- Dominique Carré, Delegate Councillor, Transport and Travel
- Antonio Aniesa, Head of Mission, Chairperson's Cabinet
- Marie Larnaudie, Head of Mission, Urban Ecology
- Frédérique Dequiedt, Delegate General, Urban Ecology (invited to some COPIL meetings)
- Jean-Marie Lemeille, Directorate General of Technical Services – Delegation for Mobility (invited to some COPIL meetings)

**TRANSPORT**

RATP (Paris' Autonomous Transport Authority)

- Sophie Mazoue, Environmental Resources Organisation
(replaced by Mélanie Duplouich)

SNCF (France's national state-owned railway company)

- Maurice Coton, Regional Institutional Head – Directorate of Territorial Affairs

Société du Grand Paris (Grand Paris Company)

- Florence Castel, Director of Environmental Engineering and Quality
- Etienne Pihoue, Head of Mission, Hydro-Geology and Risks, Environmental Engineering Directorate
(replaced Florence Castel on COPIL)

STIF (Île-de-France Transport Syndicate)

- Anne Salonia, Deputy to the STIF Head of Division – General Studies

**DRIEA** (Île-de-France Regional and Inter-*département* Directorate for Facilities and Development)

- Christophe Mascitti, Head of Department, Urban Transport
- Jean-Christophe Morizot, Head of Metro Scheme – Department of Transport Policy

**ASSOCIATIONS, USER REPRESENTATIVES, CIVIL SOCIETY**

Plaine Commune Promotion
- Edouard de Penguilly, Head of the HR Managers' Club

Plaine Commune Development Council (civil society)
- Valérie Grémont, Council Facilitator

Plaine Commune Transport Users Association
- Jean-Pierre Lerosey, Transport Users Representative

Environnement 93 (Environmental Defence Association)
- Francis Redon, Chairman

**AGENCE RÉGIONALE DE SANTÉ (Regional Health Agency)**

- Christine Jacquemoire, Deputy Territorial Delegate, Seine-Saint-Denis *Département* (number 93)
- Luc Ginot, Deputy Director –Public Health Department
*"Besoins, Réductions des Inégalités, et Territoires"* ("Needs, Inequality Reduction, and Local areas")
- Evelyne Jean-Gilles, Head of Project Development –Public Health Department
*"Besoins, Réductions des Inégalités, et Territoires"*

**ASSESSORS**

- Anne Laporte, Head of the Engineering and Methodological Support Unit
Regional Health Agency

- Muriel Dubreuil, Research Analyst
Regional Health Observatory

**OBSERVERS**

- Alexandra Auclair, Sociologist, Head of Mission
(replaced by Manuela Cheviot)
National Institute for Prevention and Health Education (Public health France)

- Hilary Dreaves, Researcher, Assessing Impact on Health
IMPACT – University of Liverpool



## ASSESSMENT TEAM

- Anne Laporte
- Muriel Dubreuil

- Alicia Amigou, Research Analyst – ORS (Regional Health Observatory)
- Jeremy Courel, Research Analyst – Department of Mobility and Transport - IAU (Paris Region Planning and Development Agency)
- Catherine Mangeney, Research Analyst – Department of Demography, Housing, Facilities, and Local Management – IAU

- Bénédicte Madelin, Manager - Profession Banlieue (urban policy resource centre)
- Hélène Balazard, Research Analyst – Local Area Coherence and Social Cohesion Unit - Cerema Lyon (Centre For Studies and Expertise on Risks, Environment, Mobility, and Urban and Country planning)
- Youcef Khemissi, Head of Mission, Democracy – Chairperson's Cabinet - Plaine Commune

# ANNEXE 2 :

## KEY INFORMANTS AND EXPERTS FACILITATORS FOR CIVIL PARTICIPATION

### KEY INFORMANTS

#### LOCAL AREA STRATEGY AND MOBILITY

Plaine Commune

- Fabrice Cayet, Head of Heritage Management
- Damaly Chum, Delegate General, Local Area Strategy
- Frédérique Dequiedt, Delegate General, Urban Ecology
- Ana Domingos, Head of Project – Cycling
- Sophie Durel, Deputy Head of Project, Urban Renewal
- Camille Geneau, Head of Project, Delegation on Mobility
- Jean-Marie Lemeille, Directorate General of Technical Services
- Juliette Noël, Head of Project, Saint-Denis Urban Renewal
- Viken Renouard, Head of Project, Walk Plan, Administrative Travel Plan, and PDIE (Business-to-Business Travel Plan)

Seine-Saint-Denis Département General Council

- Bertrand Masquelier, Head of the Transport Office, Seine-Saint-Denis *Département*

Seine-Saint-Denis Chamber of Commerce and Industry – Economy - Mobility

- Alice Ricouard, Councillor for Mobility - PDE-PDIE

#### TRANSPORT PROVIDERS

Société du Grand Paris (Grand Paris Company)

- Marianne Desserrieres, Head of Station Development, Programme Directorate
- Etienne Pihouee, Head of Mission, Directorate of Environmental Engineering
- Frédéric Willemin, Director of Environmental Engineering

SNCF

- Maurice Coton, Regional Institutional Head – Directorate of Local Area Affairs

- Carole Guéchi, Head of Projects and Synergies, Directorate of Local Area Affairs, Paris Nord
- Marie-Pierre Frydman, Head of Communication, Paris Nord Region
- Eric Thomas, Head of Studies and Prospection, Investments, and *Transilien* Development
- Denis Dumortier, Project Director, Delegated Directorate for *Transilien* Stations

RFF

- Sylvie Russelle, Head of Institutional Relations, *Tangentielle Nord* Scheme

RATP

- Mélanie Duplouich, Environmental Resources Entity

**HOUSING**

Plaine Commune Housing

- Nicolas Orsi, Head of Local Area Management
- Choukri Trabelsi, Director, Agence Sud

Logirep

- Xavier Rouvet, Head of the Seine-Saint-Denis *Département* Agency

## EXPERTS

- Basile Chaix, Director of Research, INSERM, Institut Pierre Louis d'Épidémiologie et de Santé Publique, ERES
- Syvie Fol, Lecturer in Development and Town Planning. University of Paris 1 (Panthéon Sorbonne)

## FACILITATORS FOR CIVIL PARTICIPATION

Saint-Denis

- Anne-Claire Garcia, Director Franc-Moisin and Bel Air Neighbourhoods Initiative
  Town of Saint-Denis - Péri Langevin Stalingrad Politzer – Neighbourhood Life Directorate
- Modibo Guindo, Head
  Association Canal
- Smeralda Ruspoli, Reference Person, Health in Neighbourhoods
  Town of Saint-Denis – Directorate of Health
- Raphaele Serreau, Facilitator
  Town of Saint-Denis
  Association Café Pleyel
- Mélanie Thomas, Head of the Franc Moisin / Bel Air Centre
  Town of Saint-Denis

Stains

- Fereshteh Tabib, Town Political Director
  Town of Stains
- Patricia Le Thomas-Eppe, Town Policy, Local Development
  Town of Stains
- Jeanine Brouillon, Head of CUCS Project
  Town of Stains
- Zahia Nedjar, Chairperson
  "Femme de la Cité" Association
- Ouahiba Teldja, Head
  "Lieu d'Écoute du Moulin Neuf"
  Town of Stains

Villetaneuse

- Jean-Marc Battner, Director General of Services
  Town of Villetaneuse
- Philippe Laurant-Quintin, Head of Villetaneuse Employment Centre
  Head of Project, Insertion Mission
  Town of Villetaneuse
- Emilie Farge-Bouafer, Head of Youth service
  Town of Villetaneuse
- Magali Griveau, Head of Insertion
  Villetaneuse Employment Centre
- Maria Guimarães, Technical Adviser
- Head of Social Assistants, Créteil Local Education Authority (Including the University of XIII at Villetaneuse and the University of Paris VIII at Saint-Denis)

CROUS Office

- Ikran Allaoui, Head of the *Département* Office
  CROUS Office – Créteil Local Education Authority
- Mohamed Hadad, Director
  CROUS Office – Créteil Local Education Authority

Plaine Commune

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A Health Impact Assessment (HIA) of transport projects in Plaine Commune was carried out at the initiative of Plaine Commune and of the Île-de-France Regional Health Agency. Plaine Commune is characterised by strong social and local inequalities in respect of health. Its current public-transport provision is insufficient, inequitable and poorly tailored to "home-to-work" journeys. The HIA covered three projects amongst those planned for the local area: one tram train, the *Tangentielle Nord*; one *tramway*, the southern extension of line T8; and a station on the future Grand Paris Express Metro; Saint-Denis Pleyel Station.

The aim was to assess the potential positive and negative impacts on health of those projects for the whole of the population concerned, as well as for groups identified as vulnerable, and to draft recommendations aimed at the institutions concerned. All the stakeholders in the projects, including people living or working in the territory, took part in the assessment. Three towns were the subject of in-depth data collection: Stains, Villetaneuse and Saint-Denis.

The impact assessment was based on : the in-depth study of the projects, an analysis of public policies on public transport and other associated policies, a review of the scientific literature on links between the determinants of health defined for this HIA and public transport, the description of the socio-economic, health, and environmental profile of the population concerned, and the opinions expressed in focus groups.

The HIA shows that the projects have potential short-term positive effects on respiratory problems, accidents, stress, anxiety, and psychological wellbeing, with possible long-term effects on excess weight and obesity, cardio-vascular pathologies, lung cancer, mental health and a reduction in disability. It also indicates a potential risk of reinforcing social health inequalities for the most disadvantaged groups. Recommendations aim to accentuate the potential positive effects and reduce health inequalities. The main recommendations are: raising population awareness of the benefits of the modal switch from private vehicles to public transport for the quality of the environment and for their own health; designing and organising the associated urban development to encourage active modes of travel; implementing actions to ease access to the Social Fare Structure for Public Transport contained in law but currently under-used, and reinforcing mobility-access skills; promoting partnership-based civil action to reduce the feeling of insecurity on public transport; improving access to work for local area residents, and working against the potentially negative effects of gentrification by mixed, socially-cohesive development of development programmes associated with public transport. In 2015, an assessment will be made on the effects of the HIA on the decisions taken in relation to the projects, on the take-up of recommendations by the population, and on the continuation of the inter-sector dynamic triggered.

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