

Aerodrome Safety for Manouvering Area in Soekarno-Hatta International Airport Cengkareng

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ABSTRACT

This research was conducted in the area of Soekarno-Hatta, Cengkareng. The purpose of this study is to determine the conformity between Soekarno-Hatta airport Aerodrome Safety For Manouvering Area and the Local Government Regulation of Tangerang City. The method used in this study is a survey method or field study and at the explanatory-descriptive level. The methods of data collection are documentation, interviews, and observation. The result of the study can be concluded through the role of the Tangerang City government in making the 2012-2023 spatial plan of Tangerang City, recommendations on Aerodrome Safety For Manouvering Area against the local government regulation on the building construction Tangerang City which have been made by the local government and the Regional Airport Authority I of Soekarno-Hatta Airport, and conclusions regarding the conformity between Soekarno-Hatta Airport Aerodrome Safety For Manouvering Area and Local Government Regulation of Tangerang City implemented in the Development Activity Plan of space structure plan consisting of the main activities of Soekarno-Hatta International Airport, Supporting Activities of Green Open Space, Land Use Plan.

Keywords: Aerodrome Safety For Manouvering Area, Obstacle, Local Government Regulation.

Introduction

Soekarno-Hatta Airport, as the main gate to connect Indonesia with other countries and regions, plays an important role in the process of Indonesian development. Airport World—the official media of Airport Council International 2014—publishes the list of world busiest airports in 2014. Based on the data, Soekarno-Hatta International Airport (CGK) is listed as the world eighth busiest airport and the fourth busiest airport in Asia Pacific. During 2014, the number of passenger movements at Soekarno-Hatta International Airport reaches 62.1 million passengers, increasing 3.5 percents from 2013.

In accordance with the Grand Design of Soekarno-Hatta International Airport 2008, some developments have been planned including to build an additional terminal at Terminal 3. In this case, the sketch of cargo terminal development has been completed, as the main supporting facility for commercial activities to improve the airport services to the users. In addition, the height of building around Soekarno-Hatta Airport must be considered in the Aerodrome Safety For Manouvering Area.

Aerodrome Safety For Manouvering Area is an area of land and/or waters and airspace around the airport used for flight operation in order to ensure the flight safety. (Law No. 1 2009). This area should be paid attention to guard the aircraft operation around the airport. The most common

thing and much related to this area is the condition of building height—especially around Soekarno-Hatta Airport where there are many densely horizontal and vertikal settlements and warehouses—as well as the height of buildings around the end of run-way.

In Article 206 of the Law on Aviation and Article 202 point h, Aerodrome Safety For Manouvering Area is divided into some areas, i.e. landing and take off area; area with possible danger of accidents; area under transitional surface; area under inner horizontal surface; area under cone surface; and area under outer horizontal surface.

Aerodrome Safety For Manouvering Area discussion explains the limitations/ boundaries to be referred to for the sake of safety, such as the boundaries of Aerodrome Safety For Manouvering Area, the height limitation around Aerodrome Safety For Manouvering Area, and the boundaries around it to place the flight navigation devices.

Based on Transportation Ministry Regulations, No. KM 44 2010, Aerodrome Safety For Manouvering Area is the land, sea, and/or air around the airport used for flight operation in order to ensure the flight safety. The radius of this area reaches 15 kilometers and is divided into several zones where each zone has a treshold of certain height based on the category of airport. Any object both natural and artificial should not exceed the predetermined height limit unless it obtains the Minister's approval.

Based on Government Regulation No. 40 2012: (a) Flight Safety is a condition of fulfilling safety requirements in using airspace, aircraft, airport, air transport, flight navigation, supporting facilities, and other public facilities; (b) Flight Security is a condition that protects the flight from unlawful acts through an integrated use of human resources, facilities, and procedures; and (c) Airport Grand Design as intended in paragraph (1) Government Regulation No. 40 2012, includes at least: estimated demand for passenger and cargo services; demand for facilities; facilities layout; steps of development execution; need for and use of land; work environment; interest area; Aerodrome Safety For Manouvering Area; and boundaries of noise area.

Convention on International Civil Aviation, an international convention which regulates the international civil aviation and has bound 190 countries—often known as Chicago Convention 1944—states in Article 37 that in order to improve the flight safety and security the members of Chicago Convention 1944 should try to manage civil aviation (personnel, aircraft, flight route, etc.) using regulations, standards, procedures, and organization which are uniform or in accordance with the standard stipulated by International Civil Aviation Organization (ICAO) (Yaddy Supriyadi, 2012). ICAO never makes target of zero accident. Zero accident is a target that can never be achieved (unachievable goal). In Global Aviation Safety Plan (GASP), the target ICAO wants to achieve is to reduce the number of fatal accidents in

all countries, to significantly reduce the accident rates—especially in the area with high accident rate (Moegandi, 1996).

In addition to that factor, there is another factor: environment or nature, such as unpredictable weather as the effect of climate change, which is very influential in causing flight accidents. K. Martono (2009: 428-429) adds that an accident involves several factors, namely human being, aircraft (machine), environment, use of aircraft (mission), and management. Whereas according to Suherman (1984: 169), various factors make a combination to determine the flight safety, i.e. aircraft, personnel, aviation infrastructure, flight operation, and regulatory bodies. Oetarjo Diran (1998: 253) states too: “the aviation system is a typical complex an interactive socio-technical-environmental system...”

Safety, according to ICAO (2006), is a condition with the risk of injury to someone or breakage or reduction of property to be held within or under an acceptable level, through a continuous process of problem identification and risk management. Aviation safety is “a condition of fulfilling safety requirements in using airspace, aircraft, airport, air transport, flight navigation, supporting facilities, and other public facilities (Law No. 1 2009). Obstacle control is related to procedures of objects supervisory, either at the airport or around the airport, which has potential to be or has been an obstacle, thus it influences both the safety and the efficiency of airport operation (Transportation Ministerial Regulations, 2009).

Based on Law No. 1 2009 on Aviation and some Transportation Ministerial Regulations concerning National Airport Order and Aerodrome Safety For Manouvering Area, the height of building around Soekarno-Hatta Airport should be regulated accordingly. Today, only the buildings in the airport that have been regulated, but the development around it (which is in the authority of Tangerang City Government) has not been arranged in order and is expectedly ordered through a Local Government Regulation that regulates the height limit of buildings around the Airport. The people around the airport and developers or businessmen who want to build housing complex or apartment may plan it referring to the Aerodrome Safety For Manouvering Area of Soekarno-Hatta Airport.

There has not been a conformity between Aerodrome Safety For Manouvering Area and Local Government Regulation (Perda) of Tangerang City concerning the width of Soekarno-Hatta Airport, which will be extended from 1,800 hectares to 2,680 hectares in accordance with the Grand Design of Soekarno-Hatta Airport in 2014. In order to anticipate the soaring number of passengers, the government is preparing to build runway number three which is targeted to complete in 2017. If the airport has three runways, then the service capacity will increase to 623,420 movements per year and can anticipate the growth at least until 2030s.

The land extension will use 1,000 hectares comprising 10 villages in Teluk Naga and Kosambi. However, the extension plan is rejected by the Government of Tangerang District since the people living around the airport will not be able to make income for their family. The district government offers another location in Balaraja, however, PT. Angkasa Pura II said that constructing a new airport is not easy because it requires a comprehensive study.

Based on the Grand Design of Soekarno-Hatta Airport, the authors try to study the regulations concerning the building height around Soekarno-Hatta Airport related to Aerodrome Safety For Manouvering Area, so that a regulation on building height with horizontal standard can be proposed. The regulation in the form of policy will be addressed to the airport management to settle the standard of security and flight in the area around the airport. In this case, to make the policy more powerful and binding, it should be strenghtened by Perda stipulated by the Government of Tangerang City.

Therefore, by using survey method or field study and in the descriptive-explanatory level, this study will analyze the above matters. It is an explanatory level where the variables studied will explain the object being examined through the collected data. Descriptive research is a research on independent variables without making any comparison nor connecting to other variables (Sugiyono, 2008:6).

Results and Discussions

1. Requirements for Approving and Validating the Results of Research on Aerodrome Safety For Manouvering Area

The requirements for approving and validating the results of research on Aerodrome Safety For Manouvering Area are as follows.

- a. The boundaries of Aerodrome Safety For Manouvering Area are determined by the coordinates that refer to World Geodetic System 1984 (WGS-84) and the limits of height from the Mean Sea Level in meter unit.
- b. Aerodrome Safety For Manouvering Area around the airport is determined based on the Grand Design of the airport.
- c. Aerodrome Safety For Manouvering Area of an airport that has no Grand Design is determined based on the length of runway in accordance with the development plan.

Based on the Decree of Ministry of Transportation No. KM 49 2000 on Aerodrome Safety For Manouvering Area, and Transportation Ministry Regulations No. KM 44 2010 on the Implementation of Standar Nasional Indonesia 03-7112-2005, the boundaries of Aerodrome Safety For Manouvering Area around airport is determined based on the airport Grand Design. Therefore, it is prohibited for any building or living object—both fixed and mobile—to be higher than the allowed

height limit in accordance with Aerodrome Reference Code and Runway Classification of an airport.

Aerodrome Safety For Manouvering Area of an airport is a relatively wide area. From the edge of runway—called ad runway strip—it spans until the radius 15 kilometers from the Airport Reference Point (ARP) with different heights up to 145 meter relative to the Advanced Encryption Standardd (AES). The most critical surface areas against obstacle are the approach and takeoff area, area with possible danger of accidents, the area under transition surface, and the area under inner horizontal surface.

In the inner horizontal area, the maximum height of building allowed around the airport is 45 meters. The inner area is calculated paralelly from the end of runway shoulder until radius 4 kilometers. For the region included in the radar area, the allowed maximum height of building is 15 meters or paralel with the height of radar. This calculation is made as far as 3 kilometers from the location of radar. If the height of any building exceeds the limit, it will disrupt the operation of radar and blank spot area will exist.

Article 211 paragraph (1) of Law No. 1 2009 on Aviation states that in order to ensure the flight safety and security as well as airport development, the local government should control the airport interest area. Meanwhile paragraph (2) states that in order to control the airport interest area as intended in paragraph (1), the local government should establish the

detail plan of layout for the area around the airport by considering its Grand Design and the national airport Master Plan. The Law also mandates that anyone is prohibited to be in certain areas of an airport, make obstacle, and/or do other activities in the Aerodrome Safety For Manouvering Area that can harm the flight safety and security, unless they obtain permission from the airport authority.

Moreover, Article 208 paragraph (1) states that in order to construct, change, or preserve a building, as well as to grow or raise trees in the Aerodrome Safety For Manouvering Area, it should not exceed the height limit of Aerodrome Safety For Manouvering Area; paragraph (2) Exception for the provision to construct, change, or preserve a building as intended in paragraph (1) should obtain approval from the Minister and fulfill the following requirements: (a) it is a facility absolutely needed for flight operation, (b) it fulfills the special aeronautical study, and (c) it is in accordance with the technical requirements of flight operation safety; (3) The building exceeding the limit as intended in paragraph (2) should be reported through aeronautical information service.

Meanwhile, three rings of straight angle movement for an aircraft to take-off and land from the point of main runway consist of (1) first ring, 0-46 meters high (area under transition surface); (2) second ring, 46-151 meters high (area under outer horizontal surface); and (3) third ring, 151 meters or higher (runway area for giving guidance for aircraft to land).

2. Building Permit in Aerodrome Safety For Manouvering Area Area

The recommendation related to the height of building in the Aerodrome Safety For Manouvering Area is a form of approval from the provincial government as the base to construct a building in the land and/or waters as well as air space around the airport used for flight operation in order to ensure the flight safety.

Meanwhile, concerning the above matter, Perda of Tangerang City on Tangerang City Spatial Plan 2012-2032 brings it into reality with the following provisions.

- a. To guide the development in Tangerang City by making use of space area harmoniously, balancedly, effectively, efficiently, culturally, and sustainably in order to improve equitable prosperity for people, strengthen National Defense based on Wawasan Nusantara, it is necessary to make a Spatial Plan;
- b. that in order to realize the intersectoral, interlocal, and societal cohesiveness of development, then Spatial Plan becomes a guidance in making integrated use of space for all interests carried out simultaneously by the Government, people, and/or business circle.

It also applies in the air transport related to Aerodrome Safety For Manouvering Area at Soekarno-Hatta Airport, as mentioned in the following articles: (1) Article 31, Aerodrome Safety

For Manouvering Area further referred to as Aerodrome Safety For Manouvering Area is the land, sea, and/or airspace around the airport used for flight operation in order to ensure the flight safety, (2) Article 40, airport supporting area is an area intended for the facilities which directly or indirectly support the airport activities and give economic added value to the airport management, and (3) Article 41, airport area is the area in land and/or waters with specific boundaries used as a place for aircrafts to land or take off, for passengers to go up and down the aircraft, for cargo loading and unloading, and for the transit point of intra and intermode transports, equipped with facilities of flight safety and security, as well as basic facilities and other supporting facilities.

In the second section of the City Spatial Plan Policy and Strategy Paragraph 2 Strategy of City Spatial Plan, it is stated that, Article 8 paragraph (1), the strategy to develop service centers to be more competitive and more effective by developing its function hierarchically and equipped with supporting infrastructures and facilities as intended in Article 7 point a includes: (a) developing the central and eastern parts of the city as commercial centers with regional and/or international service scale which is environmentally sound; (b) restricting the development in the northern part of the city to prioritize the safety of flight operation and developing facilities that can support the activities of Soekarno-Hatta International Airport; developing environmentally-friendly

industries in western part of the city; and (c) developing environmentally sound settlements and housings in the eastern and southern parts of the city.

In paragraph 4 Air Transport Node Article 17 Air Transport Node as intended in Article 12 paragraph (1) point c includes: (a) supporting the development of Soekarno-Hatta International Airport decided as gathering airport with primary service scale; and (b) arranging and controlling the use of space around Soekarno-Hatta International Airport area based on the limit of noise area and Aerodrome Safety For Manouvering Area that has been determined.

The subdistricts included in Aerodrome Safety For Manouvering Area comprise: (1) square off area for landing and takeoff that includes some parts of Subdistrict Benda, some parts of Subdistrict Neglasari, some parts of Subdistrict Periuk, some parts of Subdistrict Jatiuwung, and some parts of Subdistrict Karawaci; (2) area with possible danger of accident that includes some parts of Subdistrict Benda, some parts of Subdistrict Neglasari, some parts of Subdistrict Periuk, and some parts of Subdistrict Karawaci; (3) area under the transition surface that includes some parts of Subdistrict Benda, and some parts of Subdistrict Neglasari; (4) area under the horizontal surface that includes some parts of Subdistrict Benda, some parts of Subdistrict Neglasari, some parts of Subdistrict Batucapeper, some parts of Subdistrict Tangerang, some parts of Subdistrict Cipondoh, some parts of Subdistrict Karawaci, and some parts

of Subdistrict Periuk; (5) area under the cone surface that includes some parts of Subdistrict Batucapeer, some parts of Subdistrict Cipondoh, some parts of Subdistrict Tangerang, some parts of Subdistrict Karawaci, some parts of Subdistrict Periuk, and some parts of Subdistrict Cibodas; and (6) area under the outer horizontal surface that includes some parts of Subdistrict Cipondoh, some parts of Subdistrict Tangerang, some parts of Subdistrict Karawaci, some parts of Subdistrict Cibodas, some parts of Subdistrict Periuk, some parts of Subdistrict Jatiuwung, Subdistrict Pinang, Subdistrict Karang Tengah, Subdistrict Ciledug, and Subdistrict Larangan.

Paragraph 10 Area for Other Use, Article 46 paragraph (5), states that the supporting area to airport as intended in paragraph (1) point c includes square off area for landing and takeoff after 1,100 (one thousand one hundred) meters away from the end of runway and the noise area level 2 (two) and 3 (three) located in Subdistrict Neglasari and Subdistrict Benda; area for airport supporting facilities is the area around the airport decided as the prioritized cultivation area; area development for airport supporting facilities is directed to the activities directly or indirectly supporting the airport activities and the development of hajj village in Subdistrict Benda and Subdistrict Neglasari; area development for airport supporting facilities should consider the provision in Aerodrome Safety For Manouvering Area and noise area; and in the noise area level 2 (two)

and 3 (three) as intended in point a, the use of space is directed to as follows: in the the noise area level 3 (three), i.e. land and airspace that can be used to build airport supporting facilities equipped with sound insulation and can be used as green line or media for controlling the environment and agricultural land which does not invite birds to come; and in the noise area level 2 (two), i.e. land and airspace that can be used for various activities and/or buildings except for school activities and/or building, hospital, and housing.

Paragraph (6) states that area for Airport as intended in paragraph (1) point d includes in accordance with the predetermined Master Plan of Soekarno-Hatta International Airport, the development of Soekarno-Hatta International Airport area as intended in paragraph (6) to the North from the airport hedge as wide as approximately 101 (one hundred and one) hectares located in Subdistrict Neglasari and to the North and East from the airport hedge as wide as approximately 130.5 (one hundred and thirty point five) hectares located in Subdistrict Benda, and the extension to the South as far as 50 (fifty) meters from the airport hedge as wide as approximately 22.9 (twenty-two point nine) hectares located in Subdistrict Benda and as wide as approximately 9.6 (nine point six) hectares located in Subdistrict Neglasari.

The development of Aerodrome Safety For Manouvering Area concept based on Law No.1 2009 on Aviation, the things to be assessed are those

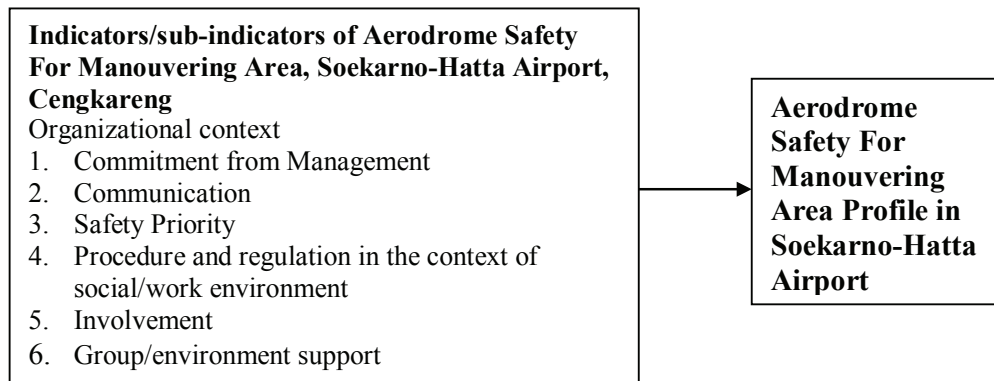


Figure 2 Indicators/sub-indicators of Aerodrome Safety For Manouvering Area

related to the following: Organizational Context consisting of Commitment from Management, Safety Communication, Safety Priority, Procedure and Regulation in Social and work Environment, Group/Environment involvement and support.

3. The Borderline Condition of Soekarno-Hatta Airport

Based on Law No. 2 1993 on the Establishment of Tangerang Municipality and the Decree of West Java Governor No. 146/Kep.174/86, the whole area of Soekarno-Hatta Airport is included in the area of Tangerang City. There has been a debate on the borderline of Tangerang District and Soekarno-Hatta Airport for a long time and arose in 2011. The Government of Tangerang District rejects the extension of the airport as wide as 1,000 hectares in Subdistricts Teluk Naga and Kosambi. The reason is that there will be a great potential for social conflict with the extension which will displace 2,000 families living in five villages. Of course, there should be many sacrifices if the airport extension in those two subdistricts is done. Tangerang District proposes three

locations for developing new terminal and runway of Soekarno-Hatta Airport. The first location is in Subdistrict Teluk Naga as wide as 400 hectares which is ready to be acquired. Based on the history, the areas to be included in the airport extension are Rawa Rengas Village and Rawa Burung Village, Tangerang District.

Consequently, the Airport development and extension plan is hampered. The Government of Tangerang District, for example, postpones the extension plan of Soekarno-Hatta airport as wide as 1,000 hectares in five villages in Tangerang District. Initially, the area extension is needed to extend the runway and Terminal 4 Soekarno-Hatta Airport. Subdistrict Benda area is about 2,967.60 hectares and mostly the land is used for Soekarno-Hatta Airport as wide as 1,968.67 hectares (66%). Based on the research, Subdistricts Benda and Neglasari are included in the area with noise level 3 (three), an area that is not comfortable to live in. Around Subdistrict Pasar Kemis in Tangerang District and Subdistricts Benda and Neglasari in Tangerang City, with the existence of dense and untidy settlement,

it is highly potential to be an obstacle for flight operation.

The development activity plan of space structure of Subdistrict Benda in the future can be classified into:

a. Main Activity, Soekarno-Hatta Airport International.

The area Soekarno-Hatta Airport now has been the place with the most dominant use of land in Subdistrict Benda (Block F). The Airport development and extension plan will be located in block D.

b. Supporting Activity,

1) Green Open Space.

Efforts to build Green Open Space are recommended for the noise area level 3 (based on the development plan), that functions as buffer zone and in the border area (irrigation channel and river) as well as in the area around the highway Prof. Sedyatmo that is projected to prevent flood from overflowing the road which can impede the access from and to Soekarno-Hatta airport.

2) Land Used Plan.

The land in Subdistrict Benda will be allocated for housing area with strict control and airport supporting facilities. Subdistrict Benda, that is projected to be extension area with strict control, faces obstacles in developing big-scale housings, especially in the area related to airport activities, such as noise area and Aerodrome Safety For Manouvering Area. With this limitation, in

the areas with (possible) danger of accident and with noise level 2 and 3, it is not permitted to develop new housings. In these areas, the housing development activity is just what has been built (existing), as shown in Figure 6.

Meanwhile, the use of land projected for the airport supporting facilities are for hotel, office of airline companies or their branch offices, office of services related to airport activities, restaurant. In doing their activities, these airport supporting facilities should still refer to the height and other regulations concerning the boundaries of Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) in the noise area.

3) Trade and Service Area

Trade activities are planned to integrate with other activities to become a Central Business District. This will concentrate on the area of Airport City development plan at Soekarno-Hatta Airport. The land to be used as trade and service activities will be in block A (sub-block A2 as wide as 23.36 hectares).

4) Soekarno-Hatta Airport Area

In order to anticipate the growth of airport activities, i.e. aircraft movement and passengers, extension to the north, east, and south is needed. The extension related to the plan is extending the Airport to the north and east. The extension of Soekarno-Hatta Airport is planned as wide as 3,300 hectares.

Table 1 Land Use in Subdistrict Benda

Block	Wide (Ha)	Existing	Problem	Recommendation
A	112.09	Agriculture, Warehouse, and Settlement	Located in the noise area and flight safety (area with danger of accident)	Develop commercial facilities, green open space, housing with strict control
B	169.8	Agriculture, Warehouse, and Settlement	The growth of warehousing activities that should be limited	Housing with strict control, warehousing, Airport supporting activities
C	196.05	Agriculture, Warehouse, and Settlement	Vulnerable to flood	Housing, warehousing and non-pollutant industry
D	399.26	Agriculture, Warehouse, and Settlement	Will be mispalced by the Airport extention	Extension plan of Soekarno-Hatta airport
E	172.83	Agriculture and Settlement		Housing with strict control
F	1,805	Soekarno-Hatta Airport	The number of passengers predicted to be 100 million per year, thus requiring extention for the airport.	Airport extension to the north, east, and south

The projected use of land in Subdistrict Benda can be seen in Table 1

The review on Perda of Tangerang District No. 13 2011, Article 25, is as follows.

4. Recommendation concerning the Aerodrome Safety For Manouvering Area against Local Government Regulation (Perda) on the Building Construction in Tangerang City

According to Law No. 1 2009 on Aviation, Aerodrome Safety For Manouvering Area is an area of land and/or waters and airspace around an airport used for flight operation in order to ensure the flight safety. Whereas in Regulation of Transportation Minister No. KM 14 2010, the boundaries of the area are determined based on the requirements of borderline barrier surface for runway instrument with Precision Approach Category I Code Number 4 in accordance with Annex 14 ICAO 1998.

- a. The air transport network system as intended in Article 14 paragraph (2) point d includes airport and airspace.
- b. Airport as intended in paragraph (1) includes the airport functioning as for commercial flight and aviation training center.
- c. Airport functioning for commercial flight is stipulated at Soekarno-Hatta International Airport as:
 - 1) Primary-scale gathering airport located in Subdistrict Kosambi, and
 - 2) Subdistrict Teluknaga.

d. Airspace as intended in paragraph (1) is the Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) of Soekarno–Hatta Airport including Subdistrict Teluknaga, Subdistrict Kosambi, Subdistrict Sepatan, Subdistrict Sepatan Timur and Subdistrict Pasar Kemis.

Meanwhile, this research variable can be described as follows.

- 1) Procedure, the construction of buildings around the airport is not in line with the procedure; the activities done in the Aerodrome Safety For Manouvering Area is not in line with the procedure; and insufficient socialization of flight safety and security to the people.
- 2) Obstacle, the length of the area free of barrier in the end of runway for initial climb is not longer than half of the runway; buildings around the airport, and the existing buildings that have been constructed.

Tangerang City Perda No. 6 2012 on Tangerang City Spatial Plan 2012-2032, concerning Provision for Controlling the Use of City Space in Part Two, General Provision for Zonal Regulation in Paragraph 2, Article 85 (5), states that the general provision for zonal regulation – airport-supporting area use as intended in paragraph (1) point d is projected based on the following provisions, (a) the allowed activities include space utilization which is directly and indirectly supports the

airport activities in the form of aircraft workshop facilities, warehousing facilities, inns, shops, restaurants, golf range, Green Layout Plan (RTH), parking area, recreation, offices, and sport facilities; (b) the allowed activities with the condition of comprising non-pollutant industry and social and public facilities based on the Aerodrome Safety For Manouvering Area provision, noise area and the predetermined flight-related regulations; (c) the utilization intensity of airport-supporting space area includes Basic Building Coefficient (KDB) maximum 50% (fifty percents), Building Floor Coefficient (KLB) maximum 4 (four), maximum building height according to the provision in Aerodrome Safety For Manouvering Area, and Green Area Coefficient (KDH) minimum 20% (twenty percents); and (d) the utilization intensity of airport-supporting space area in the area with danger of accident in Kelurahan Neglasari, kelurahan Mekarsari, Kelurahan Selapajang, Kelurahan Kedaung Wetan, Kelurahan Kedaung Baru Subdistrict Neglasari and Kelurahan Benda Subdistrict Benda.

Monitoring over high buildings in the horizontal borderline of obstacle limitation surface is carried out in cooperation between the officers of Air Traffic Control (ATC) unit and the officers of runway unit. In accordance with Regulation of Director General Air Transportation No.: SKEP/ 2770 / XII / 2010, if any high building exceeding obstacle limitation surface, then it is necessary to collect data including the global position or the building

estimation against Runway centerline, and the building form (antenna, high voltage electricity station, building, and others). It is also necessary to hold a building survey, including administrative data survey (permit) and field survey concerning the accurate position and form building. Moreover, procedural calculation should be held as well—whether the building has exceeded the allowed height or still in normal height.

Meanwhile, concerning the recommendation for Aerodrome Safety For Manouvering Area and the results of evaluation, here are some examples of recommendation for Airport Authority Area I Soekarno-Hatta about the recommendation for Aerodrome Safety For Manouvering Area and the results of evaluation on Airport Authority Office Area I and the prevailing regulation.

- a. The location planned to be apartment building situated on Jl. Lingkar Luar Barat kelurahan Duri Kosambi, Subdistrict Cengkareng, West Jakarta Municipality, DKI Jakarta Province as follows: Under the surface of Area under the outer Horizontal Surface with horizontal distance 6,521 meters from runway 25 L, at the geographical coordinate 06° 09' 30.07" LS; 106° 43' 34.43" BT, or Airport coordinate X = 24,112 meters; Y = 14,963 meters and it is 1,333 meters away from Locator Dadap.
- b. Based on the height limit requirements of square off area for approach and

take off in the Aerodrome Safety For Manouvering Area around Soekarno-Hatta International Airport, then the height of the planned Apartment building, including antenna and supporting buildings, is 114 meters from the surface of local indigenous land (AGL) or 144.675 meters against lowest runway treshold (AES) or 151 meters against the allowed MSL.

- c. In the building operation, it should fulfill the following requirements: (1) the building roof should not bedazzle the aviator, (2) it should not use electronic devices that can disrupt the radiation of Navigation aids and the radio between airport and aircraft, and (3) the building is marked and lamps are installed on it in accordance with the Decree of Director General Air Transportation No.: SKEP 32/IV/1998 or SNI 03-7051-2004 on Giving Marks and Installing Obstacle Light around Airport. The building/tower is marked with a combination of red-and-white or orange-and-white, each colored part is 1/7 one seventh of the building/tower height. On the top of building/tower, a light red obstacle light is installed still with low intensity (10 cd).

Whereas the following are examples of inconformity of Aerodrome Safety For Manouvering Area in other airports.

- a. Polonia Airport, Medan. Four buildings in the form of tower, building, condominium with the height ranging around 70-120 meters

are considered as violating the boundaries of Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) of Polonia Airport. The condition that may happen needs attention from the Government of Medan City in lay outing the space area, so that they are more selective in issuing building permit. With the population of almost three million people, Medan as a metropolitan city has been farr left behind compared with other metropolitan cities in term of high rise building (Deri Pembas Syafar, 2014).

Another example in Medan, the Commander of Air Force Base TNI AU Soewondo Medan has refused the height request proposed by Podomoro Deli City, i.e. 200 meters. Based on the Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) of Lanud Soewondo, the height of building in the former location of Deli Plaza is just 49 meters. The obstacle for this development is caused by the existence of Polonia Airport, but after the airport is moved to Kualanamu, TNI AU keeps implementing Aerodrome Safety For Manouvering Area.

- b. A. Yani airport, Semarang. There are two buildings whose height exceed the height limit determined in Aerodrome Safety For Manouvering Area of Semarang, namely a house behind the Office of Women Empowerment on Jl. Pamularsih and Hotel Gumaya on Jl.

Gajah Mada (Viradhea Gita, Sawitri Subiyanto and Arief Laila Nugraha, 2014:163).

- c. Adi Sutjipto Airport, Yogyakarta. The existence of Boko hill which is an archaeological site becomes an obstacle for aircrafts landing and take off (Muhammad Yusuf, 2010: 56).
- d. Pekon Serai Airport in Lampung Barat District: (1) high trees in the Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) should be trimmed, so it does not disrupt the air traffic and prevent the possibility of flight accident, and (2) some high buildings like BTS Towers, which generally have a height of around 70-120 meters and are included in the boundaries of Aerodrome Safety For Manouvering Area (Aerodrome Safety For Manouvering Area) of Pekon Serai Airport. Control and regulation over the tower height should be made in order to prevent the possibility of flight accidents (Andius Dasa Putra and Aleksander Purba, 2009:116).

Conclusion

The condition of Soekarno-Hatta Airport boundaries has been arranged although not all the rapid growth of this area can be fully accommodated. This is seen from the role of Local Government of Tangerang City in making Tangerang City Spatial Plan 2012-2032.

Meanwhile, recommendation on Aerodrome Safety For Manouvering Area

against Perda on building construction in Tangerang City has been done well by the Local Government and the Authority of Airport Area I, Soekarno-Hatta Airport. In the coordination among agencies concerning the building construction around Aerodrome Safety For Manouevering Area, each party recommends that the requirements of height limit for square off area for approach and take off at the Aerodrome Safety For Manouevering Area around Soekarno-Hatta International Airport should be obeyed by developers. It also applies to the conformity of Aerodrome Safety For Manouevering Area Soekarno-Hatta Airport with Tangerang City Perda which is implemented in Development Activity Plan for space structure plan consisting of Main Activities of Soekarno-Hatta International Airport, Supporting Activities of Green Open Space, and Land Use Plan.

The boundaries of Soekarno-Hatta Airport that have been arranged are expected to accommodate the rapid growth of this area in accordance with General Provision for Zonal Regulation of Tangerang City Spatial Plan 2012-2032.

It is better for the authority of Soekarno-Hatta Airport to hold regular meeting with the Local Government of Tangerang City in order to evaluate the Recommendation on Aerodrome Safety For Manouevering Area against Perda (Peraturan Daerah) / Local Government Authority on building construction in Tangerang City.

The local government of Tangerang District and PT. Angkasa Pura II (Persero) should give attention and input, especially in area and space arrangement, if they want to issue a building permit such as for PLN Sub station, tower (either BTS or electricity) or other high buildings located in the boundaries that may cause a danger of flight accident.

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Attachments

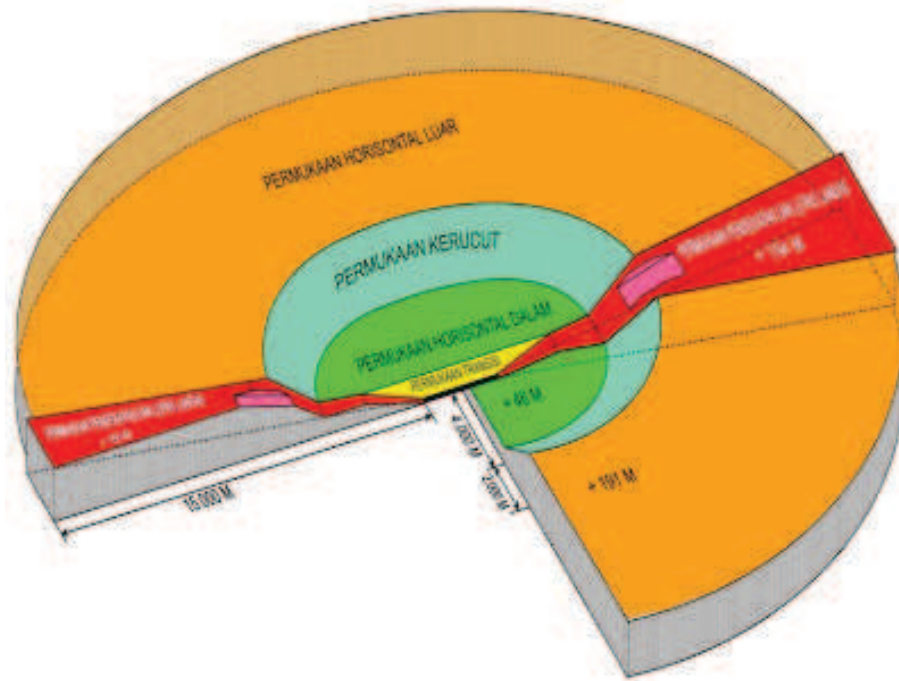


Figure 1 Aerodrome Safety For Manouvering Area
(Source: skyscrapercity.com, 2013)

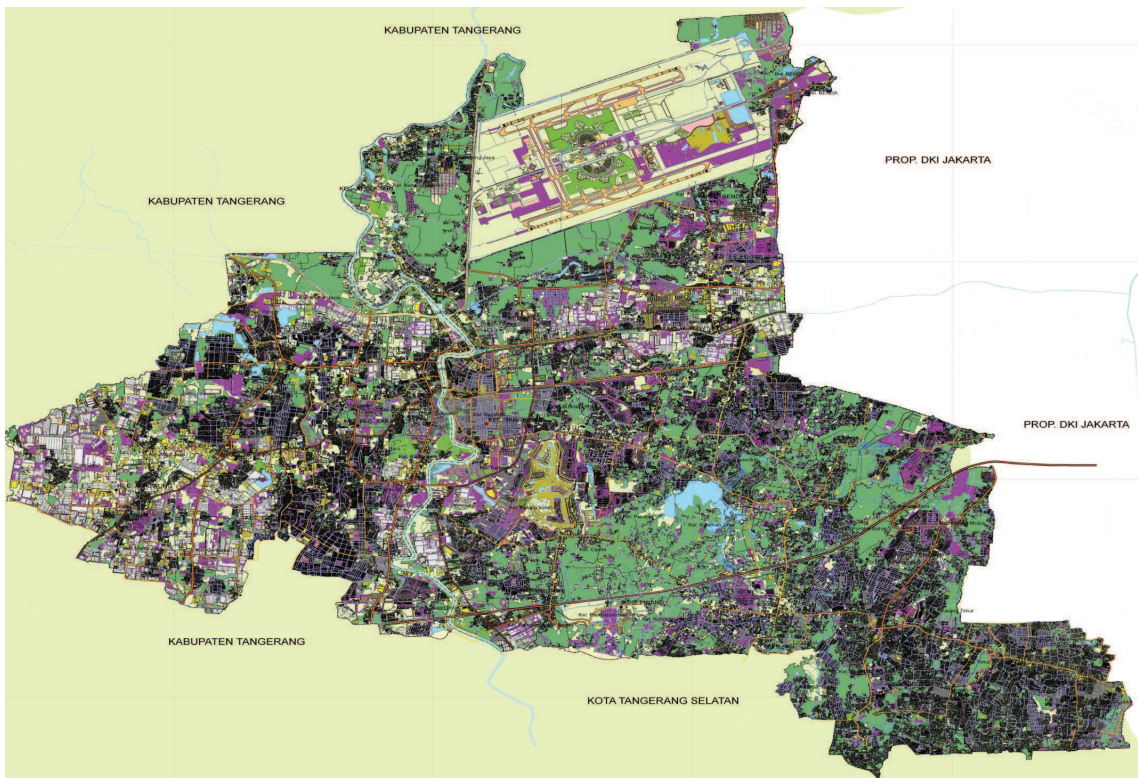


Figure 3 Map of Soekarno-Hatta Airport condition 2014

Kawasan peruntukan penunjang bandara :		
a. Kawasan ancangan pendaratan dan lepas landas	- Kec. Neglasari; - Kec. Benda.	
b. Kawasan fasilitas penunjang bandara	- Kec. Neglasari; - Kec. Benda.	
e. Kawasan Kebisingan :		
	- Tingkat 3 :	- Fas. Bandara; - Jalur hijau; - Pertanian.
	- Tingkat 2 :	- Non sekolah; - Non r. sakit; - Non. r. Tinggal
Kawasan bandara :		- Rencana induk bandara
Kawasan Pertahanan Dan Keamanan :		- Kec. Jatiuwung;
a. Kompl. Bataliyon 203		- Kec. Jatiuwung;
b. Kompl. Satrudal		- Kec. Neglasari;
c. Komp;. Komando Distrik Militer 0506		- Kec. Tangerang;
d. Komp. Resosrt Kepolisian		- Kec. Tangerang

Figure 6 Area allocated for supporting Soekarno-Hatta airport (masuk lampiran)



Figure 7 Data of Area Growth in Tangerang City

Table 2 Appendix XV Tangerang City Perda No. 6 2012 on Tangerang City Spatial Plan 2012-2032

General Provision for Zonal Regulation

STRUKTUR RUANG KOTA	DESKRIPSI	MATERI YANG DIATUR			
		KETENTUAN UMUM KEGIATAN (DIPEBOLEHKAN, BERSYARAT, DILARANG)	KETENTUAN UMUM INTENSITAS RUANG (KDB, KLB, KDH, KETINGGIAN)	KETENTUAN UMUM PRASARANA DAN SARANA MINIMUM	KETENTUAN UMUM LAINNYA
JARINGAN PERKERETAAPIAN		<p>a. kegiatan pemanfaatan ruang yang diperbolehkan di sepanjang sisi jaringan jalur kereta api dilakukan dengan tingkat intensitas menengah hingga tinggi yang kecenderungan pengembangannya dibatasi;</p> <p>b. kegiatan pemanfaatan ruang yang diperbolehkan bersyarat adalah kegiatan yang peka terhadap dampak lingkungan akibat lalu lintas kereta api di sepanjang jalur kereta api; dan</p> <p>c. kegiatan pemanfaatan ruang yang tidak diperbolehkan adalah kegiatan yang dapat mengganggu kepentingan operasi dan keselamatan transportasi perkeretaapian.</p>			Penetapan garis sempadan bangunan di sisi jaringan jalur kereta api sekurang-kurangnya 20 (dua puluh) meter dari as jalan kereta api terdekat.
SIMPUL TRANSPORTASI UDARA		<p>a. kegiatan yang diperbolehkan meliputi pembangunan fasilitas bandar udara, penghijauan, kegiatan penunjang pelayanan jasa kebandarudaraan, penunjang pelayanan keselamatan operasi penerbangan, penunjang bandar udara umum, dan kegiatan pertahanan dan keamanan negara secara terbatas;</p> <p>b. kegiatan yang diperbolehkan bersyarat meliputi pemanfaatan tanah datar/atau perairan serta ruang udara di sekitar bandar udara umum serta kegiatan lain yang tidak mengganggu keselamatan operasi penerbangan dan fungsi kawasan</p>			

STRUKTUR RUANG KOTA	DESKRIPSI	MATERI YANG DIATUR			
		KETENTUAN UMUM KEGIATAN (DIPEBOLEHKAN, BERSYARAT, DILARANG)	KETENTUAN UMUM INTENSITAS RUANG (KDB, KLB, KDH, KETINGGIAN)	KETENTUAN UMUM PRASARANA DAN SARANA MINIMUM	KETENTUAN UMUM LAINNYA
		<p>peruntukan bandar udara umum; dan</p> <p>c. kegiatan yang tidak diperbolehkan meliputi kegiatan yang berada di daerah tertentu di bandar udara umum, membuat halangan (obstacle), dan/atau kegiatan lain yang mengganggu fungsi kawasan peruntukan bandar udara umum.</p>			
JARINGAN ENERGI DAN KELISTRIKAN		<p>a. kegiatan yang diperbolehkan meliputi pembangunan prasarana dan sarana jaringan transmisi tenaga listrik, kegiatan penunjang sistem jaringan transmisi tenaga listrik, dan penghijauan;</p> <p>b. kegiatan yang diperbolehkan bersyarat meliputi kegiatan pemukiman, pertanian, kemasyarakatan, olah raga, rekreasi, perparkiran, dan kegiatan lain yang bersifat sementara dan tidak permanen dan tidak mengganggu fungsi sistem jaringan transmisi tenaga listrik; dan</p> <p>c. kegiatan yang tidak diperbolehkan meliputi kegiatan selain sebagaimana dimaksud pada huruf a dan huruf b yang dapat mengganggu fungsi sistem jaringan transmisi tenaga listrik.</p>			<p>a. zona bebas berjarak minimum 20 (dua puluh) meter di luar sekeliling gardu induk dan dilarang untuk bangunan dan kegiatan yang mengganggu operasional gardu induk.</p> <p>b. penetapan garis sempadan jaringan tenaga listrik sekurang-kurangnya 15 (lima belas) meter dari bagian atau kabel terluar jaringan tenaga listrik.</p>