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Stormwater treatment for airports in winter condition countries

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Urban stormwater treatment methods have been studied for many years. However, research about the treatment solutions for airports in winter condition countries is still limited. This thesis project deeply analyses the existing stormwater treatment practices for the airports, and specifically proposes the most suitable one for airports in winter condition countries, taking Helsinki-Vantaa International Airport as a case study.

In this thesis project, the crucial parameter, which majorly affect the efficiency of a treatment approach, such as rainfall intensity, temperature and airport conditions are obtained from the Finnish Meteorological Institute and other scientific resources. A comparison between the methods based upon several criteria namely the amount of rainfall, local condition, requirements and applicability, is carried out using the real data.

The findings from this thesis show that a combination of hydrodynamic separator as a primary treatment and media filter, infiltration device or porous pavement as a secondary treatment are applicable in the airports. Further study will be conducted in the future to design a highly effective stormwater treatment system in airports in winter condition countries.

Keywords	stormwater treatment methods, airport condition, winter condition, rainfall intensity, stormwater monitoring

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Appendix 1. Elevation profile of Helsinki-Vantaa International Airport

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1 Introduction

A large body of data concerning water treatment, especially for stormwater, has been reported. Stormwater is believed to be a source of safe water for human, flora and fauna. People believe that pollutants such as acids, dust, waste, trash, hazardous chemicals, pathogens, heavy metals, sediment, and hydrocarbons. contaminate that stormwater when precipitation falls down from the sky [1]. Rain, hail, and snow, which are the main forms of stormwater, have two fates, one of is being absorbed into the ground and waterbodies and the other is running off. It is obvious that runoff not only transports pollutants in their waterways but also causes flooding [2]. A considerable amount of research has been focused on stormwater but there is little research on the methods for airports in winter condition countries.

1.1 Aim, scope and objectives

The aim of the thesis was to investigate the most suitable stormwater treatment method for airports in winter condition countries, to be specific Helsinki-Vantaa International airport. This thesis presents rainfall intensity, Vantaa airport condition, and treatment methods for stormwater. The objective of this research is to reduce pollutants load from stormwater on the environment. A deep research has been conducted in order to get necessary data for choosing the most applicable method. Section II describes the rainfall intensity and weather conditions. In Section III, the pollutants, drainage and stormwater monitoring are described. Treatment methods for stormwater are illustrated in Section IV. Environmental conditions surrounding Vantaa airport are also clarified. The last section presents discussions and conclusions of the studied methods.

2 Rainfall intensity and weather condition

A considerable amount of literature has been published on rainfall intensity. These studies provide rainfall intensity definition, procedures of measurement, and their values in practice. In this chapter, rainfall intensity is defined and measurement methods are decribed. In addition, rainfall in Finland is also taken into account.

2.1 Rainfall intensity meaning

First of all, rainfall intensity can be defined as follows: “the ratio of the total amount of rain (rainfall depth) falling during a given period to the duration of the period It is expressed in depth units per unit time, usually as mm per hour (mm/h)” [3]. In some cases, rainfall intensity unit is the volume of the falling water on a square meter in a certain period of time, *e.g.* 100 litters per square meter per day (100 l/m^2d). Depending on the local situation, people classify intensity of high or low. In general, intensity of rainfall is categorised as low (2 ml/d) or high (30 ml/h), which may lead to floods [4]. Besides, rainfall intensity can be considered as a national indicator with high relevance and accuracy [5]. Critchley, Siegert and Chapman holds the view that rainfall intensity plays important role in water harvesting planning and management [3]. Because of variability of annual rainfall, a water harvesting planner need to use probability analysis to select the appropriate design rainfall [3].

As mentioned above, rainfall will become runoff when it falls onto impervious surfaces. At the beginning of a rain, the very first drops touch the leaves and stems, which are considered as interception rainfall storage. The second tide of water drops reach the ground and infiltrate into the underground. In the beginning stage of a rain, a large portion of water is intercepted on the plants and penetrate into the soil. It is obvious that just only small amount of runoff appear. The more water fall, the more water infiltrate into the soil, the less storage capacity of the soil is, and the more runoff presents on the floor. Figure 1 shows the relationship between rainfall and runoff. Runoff is affected by soil type, vegetation, and slope and catchment size. One can calculate runoff coefficient and seasonal runoff coefficient by applying these formulas:

$$k = \frac{runoff}{rainfall}\ (^{mm}/_{mm})$$

$$k_{seasonal} = \frac{seasonal\ total\ runoff}{seasonal\ total\ rainfall}\ (^{mm}/_{mm})$$

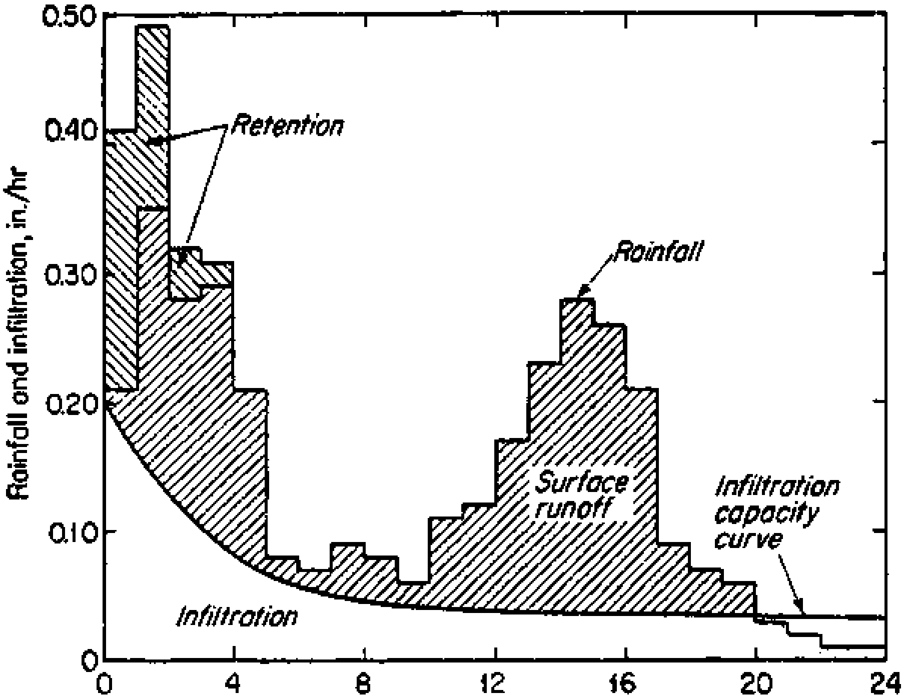


Figure 1: Schematic diagram illustrating relationship between rainfall, infiltration and runoff (Source: Linsley et al. 1958)

A formula of rainfall intensity-duration-frequency (IDF) relationship is proposed by Koutsoyiannis *et al* [6]. In addition, Dairaku [7] believes that "orographic rainfall characteristics can be attributed to the higher frequency of relatively weak rainfall intensity events at high elevations. These events have longer durations than the stronger rainfall intensity events". It is essential to understand this relationship for water resources application. The IDF curves and rainfall intensity table are proposed in order to predict how often a storm of a specific intensity and duration may occur based on historical data, which will be discussed in the next section.

2.2 Water measurement and monitoring

When it comes to how stormwater is collected for measurement, there are several methods available depending on the purpose and the required accuracy. The first way to measure rainfall intensity is using a standard raingauge. The height (in millilitre of the rainwater) is measured after a period of time (in hour) and the result is obtained with some errors. The simplest raingauge is a 5 inch raingauge with a funnel inside to collect stormwater into a glass bottle below. The water is poured from the bottle to a graduated measure and the height of the water column is checked e.g. 2 millilitre of rain falling into the raingauge. The tipping bucket raingauge is an automatic instrument of the same function and the same principle as the 5 inch raingauge. Stormwater from the funnel goes to a tube, reaches a switch mechanism, and gets into a pair of buckets sitting in a seesaw. Then, each bucket receive water, the seesaw is imbalanced which leads to movement which detected by a switch. The more rainfall, the more tips. Each tip equals to 0.2 millilitre of rainfall. There are also other equipment namely wetness sensor and present weather sensor to measure electrical characteristic changes and to detect rainfall intensity with high accuracy [8].

Regarding IDFs tool usage, latitude and longitude are inputted to the IDFs programme. The outputs are IDF chart, IDF table, and Polynomial coefficients and constants table. On the basis of the outputs, one can speak how often a certain rain will occur [9]. Stormwater monitoring is essential for reducing pollution, protecting ecology and also for approving resource consents. Stormwater is managed by Best Practices Practices (BMP) including structural and non-structural BMPs. It can be monitored by national or international guidance, a monitoring programme, grab sampling, and flow portional sampling [10]. A useful example of stormwater monitoring plan is the City of Gresham, Oregon. The first step to do is making a design sample and location samples for analytical procedures. Then, samples are collected and handled along with quality control procedures. The most important parts are data management, validation, assessment and making a report [11]. It is important to choose appropriate control measure options for each specific pollutant such as total suspended solids, oil and grease, pH, chemical oxygen demand, and metals [12]. Kellogg Brown & Root Pty Ltd did a water monitoring project commissioned by Manningham City Council by completing three stages [13]. In the first stage, they reviewed all necessary aspects and assessed the implementation of the existing stormwater management plan. In the next stage, a review of best practice management in Victoria was done. The last step included updating the implementation plan, developing the guidelines, and reporting on the stormwater areas [13].

2.3 Weather and climate condition

Moving on to consider Finnish weather and climate, Finland lies between latitudes of 60° and 70° N having long and dark winter. For that reason, stormwater appears in form of snow and hail in six months from November to April. Climate comprises solar radiation, cloud cover, temperature, wind and storm, humidity and fog, and precipitation. The range of annual sunshine hours is from 1300 to 1900 resulting to considerably radiation changes. People in the south-western Finland, where mean annual temperature is 5.5°C, undergo warmer weather than in the north-east. Wind speed is slowest on the inland with 2.5 to 4 m/s in comparison with that on the coast and that on the sea. Storms rarely appear in Finland. Air humidity can reach the peak in summer with small variation. The most common season of fog is autumn until early winter, roughly 40 to 80 km from the seaboard [14].

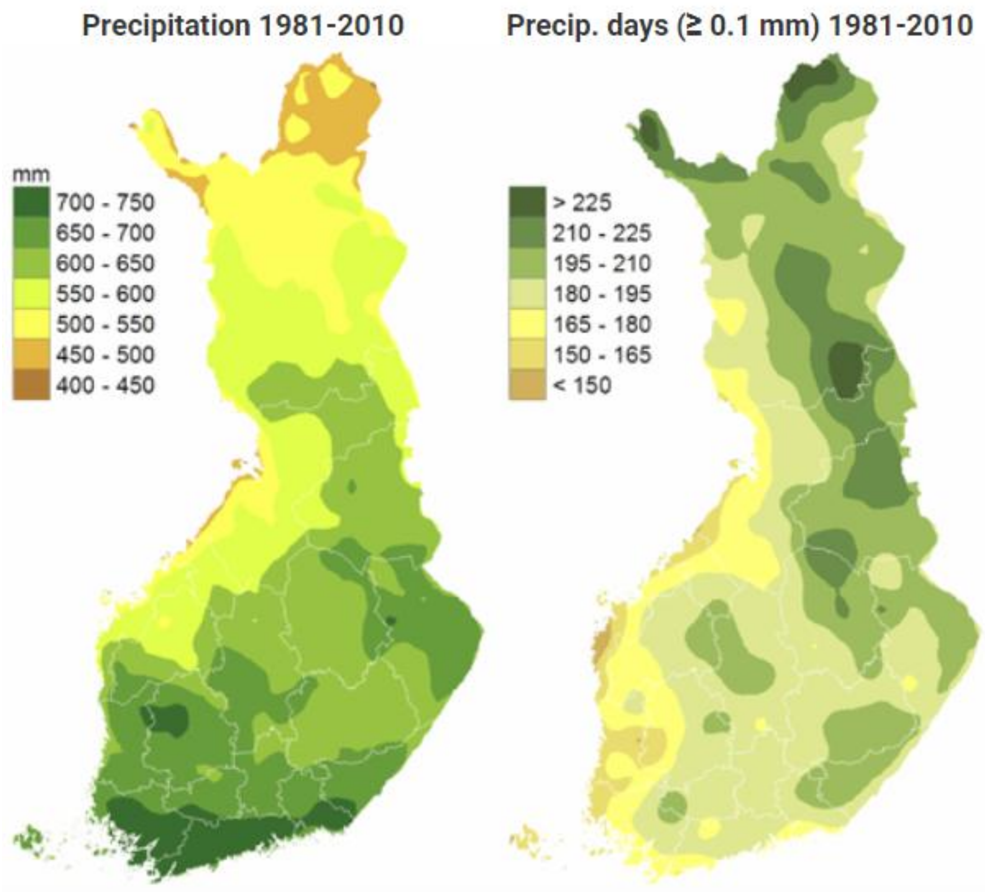


Figure 2: Annual precipitation of Finland in 1981-2010 [15]

The average of total precipitation of Finland is from 600 to 700 mm per year, see Table 1. However, precipitation of coastal area and northern region is slightly less. The highest precipitation periods are July-August on the inland and September-October on the coast. In inland areas, the highest daily precipitation is approximately 150 mm and more than one hundred eighty two days in one year have at least 0.1 mm/d precipitation. Each year, only 10 to 15 days have more than 10 mm/d precipitation [14]. As shown in Figure 2, although the total precipitation in the South is higher, the total number of precipitation days in the North is higher.

Table 1: Annual precipitation of Finland in millimetre [14]

Precipitation	Finland
Highest	900-1100
Average	600-700
Lowest	200-300

Finnish climate makes a deep impression on visitors or travellers with long and cold winter together with short and moderate summer. Combination of maritime and continental climate contributes intermediate in Finland. Finland's geography including high latitudes and edging location on the European continent affect the climate of Finland in both direct and indirect ways [16].

3 Airport condition

Airports play important roles in providing safe and reliable transportation services for short and long distances, creating various job positions, increasing the economic potential, and the possibility for cultural exchange. From the view of environmental engineering, airports affect directly to local stormwater quality and wildlife. The following part of this paper moves on to describe in greater details the airport condition when it is considered as a source of pollutants.

3.1 Overview of airport as source of pollutants in stormwater

To begin with, the analysis, planning, and design of airports should be done in a proper process from time-horizon, growing demands, and alternative solutions. The airport systems deal with environmental dimensions including air zone, land zone, and ground zone. The amount of passengers and cargo is also a contributing element in airport planning [17]. Janíc holds the view that greening airports can improve social and economic growth while reducing unfavourable impacts on the environment [18]. Airports release noise, air and water pollutants by using fossil fuel as well as deicing agents. Monitoring, analysing and assessing are needed to make an airport become sustainable and multimodal transportation point. In order to make full use of the airport area, many studies have been done to improve the runway capacity while having the same total airport space. In addition, using liquid hydrogen instead of fossil fuel is another way of reducing air pollution. The expansion of large airports require fitting plans about controlling noise, emissions, congestion, land use, and safety. For example Janíc [18] tried to predict the greening possibility of airports by using progressive technologies and operations.

According to Larm [20], chemicals and substances in the atmosphere and urban surfaces contaminate stormwater in their water way. “Typical urban stormwater pollutants include nutrients such as nitrogen (N) and phosphorus (P), solids, metals, fertilizers, pesticides, oils and hydrocarbons [19]. Stormwater from dense urban areas commonly contains high levels of nutrients (N and P), and runoff from industrial areas high concentrations of suspended solids, lead (Pb), zinc (Zn) and copper (Cu). Stormwater from roofs is generally considered as clean but depending on the material, roofs can contribute to high metal (Cu and Zn) concentrations in stormwater. [20]”. The main source of pollutants for storm water is traffic areas with high concentration of oil, heavy metals, and COD [21, 22]. Therefore, treating stormwater or runoff in urban areas can give more benefits for the environment than in arable areas [23].

In terms of deicing agents, the aircraft deicing fluids or aircaft anti-icing fluids are frequently used in these days. Inorganic salt and sand can be used as deicing agents also since they are cheap. However, they are abrasive, leading to corrosion and water body damage [24]. Moreover, organic compounds namely calcium, magnesium acetate, potassium acetate, potassium formate, sodium formate, calcium formate, urea, and agricultural by-products are also used as chemical deicers [25].

The total usage of deicing fluid in the US is approximately 95 million litre per year. There are four main types of deicing fluids, which are composition of ethylene glycol, propylene glycol, thickening agents, wetting agents, corrosion inhibitors, colour, and UV-sensitive dye [26].

The Social of Automotive Engineers defines four types of deicing fluids as follows:

> Type I fluids have a low viscosity, and are considered "unthickened". They provide only short term protection because they quickly flow off surfaces after use. They are typically sprayed on hot (130–180 °F, 55–80 °C) at high pressure to remove snow, ice, and frost. Usually they are dyed orange to aid in identification and application.
>
> Type II fluids are pseudoplastic, which means they contain a polymeric thickening agent to prevent their immediate flow off aircraft surfaces. Typically the fluid film will remain in place until the aircraft attains 100 knots (190 km/h) or

so, at which point the viscosity breaks down due to shear stress. The high speeds required for viscosity breakdown means that this type of fluid is useful only for larger aircraft. The use of Type II fluids is diminishing in favour of Type IV. Type II fluids are generally light yellow in color.

Type III fluids can be thought of as a compromise between Type I and Type II fluids. They are intended for use on slower aircraft, with a rotation speed of less than 100 knots. Type III fluids are generally light yellow in color.

Type IV fluids meet the same AMS standards as Type II fluids, but they provide a longer holdover time. They are typically dyed green to aid in the application of a consistent layer of fluid [26].

According to many studies, monitoring stormwater contaminated deicers in winter requires cautious planning and implementation. Otherwise, decing agents and other substance have a chance to run into the water pathway and pollute the water source. Figure 3 gives an example of an airplane undergoing the deicing process in a Russian airport.

Figure 3: An Aeroflot Airbus A330 being de-iced at Sheremetyevo International Airport. (Source: Wikipedia)

3.2 Aircraft safety

As far as aircraft safety is concerned, this report focuses on preventing wildlife injury caused by airports and reducing wildlife attraction. If Conover's findings [27] are accurate, visual stimuli can inhibit wildlife from particular areas. Therefore, visual treatment is a safe method to prevent mammals and birds from using a specific regions since it affects antipredator behaviours. However, depending on visual capability of each type of mammals and the situation of application, the visual deterrent appears in different forms such as lighting cues [28-31], lasers [29], or effigies. More studies are needed to determine whether lights at different wavelengths get a higher efficiency of wildlife behavioural response [32]. Table 2 shows the method of controlling wildlife by limiting their food sources near airports.

Table 2: Common wildlife food resources found at and near airports, the hazardous species they attract, and option for management [32]

Food resource	Species or species group	Management options	References
Turfgrasses	Canada geese	Replace palatable turfgrasses with less desired species or types, alternative land covers, or artificial turf.	Conover (1991), Pochop et al. (1999), Washburn et al. (2007), Washburn and Seamans (2012); Chapter 10
Other terrestrial vegetation (seeds, fruit, etc.)	White-tailed deer, passerine birds, doves and pigeons, wild turkeys	Remove plants; erect netting or fencing.	Bernhardt et al. (2009), Biondi et al. (2011)
Aquatic vegetation	Ducks	Remove plants; erect netting; physically alter stormwater retention and detention ponds.	Blackwell et al. (2008); Chapter 9
Small grain and corn production	Geese, blackbirds, doves, sandhill cranes	Convert to alternative crops.	Williams and Jackson (1981), Humberg et al. (2007), Blackwell et al. (2009), Martin et al. (2011); Chapter 11
Small mammals	Raptors, owls, coyotes	Reduce population with rodenticides; manage or convert vegetation.	Stucker and Dunlap (2002), Witmer and Fantinato (2003), Witmer et al. (2007), Witmer (2011)
Carrion	Nearly all carnivorous vertebrates, but especially vultures, gulls, raptors, crows, coyotes, raccoons	Promptly remove and dispose of vertebrates struck by aircraft or ground vehicles.	DeVault et al. (2003), Blackwell and Wright (2006)
Fish and other aquatic animals	Ducks, osprey, eagles, pelicans, cormorants, herons	Remove fish in airport water bodies.	Werner and Dorr (2006)
Earthworms	Gulls, passerine birds	Modify runways and taxiways; use earthworm deterrents.	Dekker (2003)
Insects	Gulls, passerine birds, some raptors	Modify vegetation.	Buckley and McCarthy (1994), Caccamise et al. (1994), Bernhardt et al. (2010), Kutschbach-Brohl et al. (2010), Washburn et al. (2011)
Trash facilities (landfills, trash-transfer stations)	European starlings, gulls, pigeons	Properly manage trash facilities; employ frightening (dispersal) techniques.	Belant (1997), Patton (1988), Washburn (2012)
Human food waste (restaurants, etc.)	Geese, ducks, European starlings, pigeons, sparrows, and so on	Discourage feeding wildlife near airports.	International Civil Aviation Organization (2002)

Another effective method to frighten birds is chemical repellents of two types:

> Primary repellents possess a quality (e.g., unpalatable taste, odor, irritation) that evokes reflexive withdrawal or escape behavior. Secondary repellents evoke an adverse physiological effect (e.g., illness), which the animal associates with a sensory cue (e.g., taste, odor, visual cue) and then learns to avoid. These definitions help to quickly assess the likely effectiveness of a chemical repellent in a particular ecological context [32].

It is important to emphasise that the chemical repellent usage must follow instructions of U.S. Environmental Protection Agency registration [32].

Reducing attraction to wildlife is a complicated issue regarding the connection between birds and water, stormwater management practices at airports, potential alternatives, and stormwater facilities. It is obvious that temporary ponds and wetlands draw attention of fowls. Runoff after a storm can be stored in retention ponds for a maximum of 48 hours. Beside of managing resources, strategies to enhance aircraft safety might involve wildlife monitoring to understand animal movement, monitoring hazardous birds, applying avian survey methods, and find a suitable direction for future.

3.3 Drainage and monitoring

So far this paper has focused on water pollutants in airports and aircraft safety. The following section will discuss about drainage system and stormwater monitoring in airports. Airports have been built on flat land, a favourite place of standing water. Therefore, the sewage should be designed carefully. When large airports expand in size, the capacity of present stormwater treatment system has to increase by expanding retention ponds. However, this can attract water birds. Instead of increasing the pond size, a structural BMP can treat almost half of the total suspended solids in stormwater loading. Wiseman concluded that manufactured treatment devices were the most practical BMP category [33].

Airports require an integrated drainage system to remove large amount of surface and subsurface water from impervious areas. There are three steps to design a fitting drainage. First of all, the amount of runoff by using rational method is estimated. Then, a collection and disposal system for runoff including layouts, pipes, channels, inlets, manholes, and apparatus are designed. Lastly, a sufficient underground region for the drainage is provided [34]. Seattle-Tacoma is a good illustration of drainage improvement since safety is the primary care followed by water speed. Drainage upgrading faces many problems of pavement and underground infrastructure to make sure that no ponds and pipe breakdowns exist.

> The storm water management system used some 4,877m (16,000 linear feet) of 300-914mm (12-36 inch) diameter pipe, most of which was thermoplastic pipe – SaniTite HP pipe – from Advanced Drainage Systems, Inc. (ADS). The company designs and manufactures water management components that include its well-known N-12 corrugated high-density polyethylene (HDPE) pipe" [35]. The plastic pipes are effective with lightweight, reasonable price, and sustainable for collecting and removing water from the ground surface [35].

Dempsey and Pur provided a report about guidelines for airport drainage system in 1990. Local climate is the first factor to be evaluated, including for example, temperature, humidity, precipitation, and topography. Climate evaluation can be done by Climate-Materials-Structure Programme and Integrated Climate Model. Then, the volume of rainfall runoff is determined by using Rational method. In order to design airport surface drainage, the managers take grading, inlet location, grates, inlet structure, drainage culverts, speed of flow in pipes, pipe loads, speed of flow in open channels, and ponding in to consideration. Negative impacts of wet pavement on aircraft safety is the reason for pavement surface grooving and porous friction courses. In addition, pavement subsurface drainage, installation equipment and processes are granted carefully with proper maintenance and evaluation [36]. In recent years, airport drainages have been upgraded for higher efficiency and safety level. In summary, this chapter focuses on pollutants in the airports, reducing attraction of wildlife and drainage monitoring.

4 Stormwater treatment methods

This chapter describes the existing stormwater treatment methods in the airports with some case studies. In the history of stormwater management, people used to collect and remove storm water from the street as quick as possible leading to erosive effect in streams, rivers, and other water bodies. From the late 1980s, many studies and programs haves been applied to minimize erosion from untreated stormwater. In recent years, BMPs are commonly implemented to diminish pollutants load from non-point source pollution from entering the environment [37]. Stormwater treatment procedure has three steps namely primary, secondary, and tertiary treatment [38].

Table 3: Stage of treatment train [39]

Treatment	Process	Pollutants	Typical application
Primary treatment	· physical screening · rapid sedimentation	· gross pollutants · coarse sediment	· grassed swales · litter traps · sediment ponds
Secondary treatment	· fine particle sedimentation · filtration techniques	· fine sediment · attached pollutants	· swales · infiltration trenches · porous paving · bio-retention systems
Tertiary treatment	· enhanced sedimentation and filtration · biological uptake · absorption onto sediments	· nutrients · dissolved heavy metals	· bio-retention/ bio-infiltration systems and wetlands

Table 3 presents three main stages of stormwater treatment train. To be more specific, treatment train is a combination of many stormwater treatments in a proper order to meet the needs of human and environment. Each stage will be presented in detail after describing the found pollutants in stormwater.

4.1 Pollutants in stormwater

As explained in section 3.1, it is clear that determining pollutants in stormwater plays an important role in choosing suitable treatment method. In rural areas, ground surface is covered with forests, rainfall absorbing into soils, grounds, and plants resulting to balanced hydrology. On the urban areas, on the contrary, rainfall and melted snow runs off the street transporting sediments, trash, suspended solids, bacteria, viruses, nutrients, metals, and others pollutants through natural channels and drainage systems [37; 38; 40; 41].

The impact of physical and biochemical characteristics of runoff on the environment are significant. Change in water flow and channel may lead to volume alteration causing floods. High phosphorus and nitrogen concentration is a major influence on eutrophication, deterioration of water clarity, and popularity of unwanted algae [41]. Heavy metals alter growth and development of aquatic animal which can give rise to unbalance of ecosystem [42]. Chloride correlated with rock salt from road deicer alter lake mixing arrangement, reduce biodiversity and organisms' health [43]. Besides, microbial pathogens contaminate shellfish and threaten human health [41]. The lacking of plants in metropolitan area heat up the runoff leading to high temperature stormwater. It affects directly fish health when the runoff reaching lakes and rivers [44]. Reducing oxygen concentration in water caused by decomposition of organic matter damage aquatic life. In addition, hydrocarbons originated from vehicles contaminate runoff and alter aquatic ecosystem by consuming oxygen in the hydrocarbon degradation [41]. There are various types of pollutants existing in runoff affecting the environment by one way or another.

4.2 Primary treatment

When stormwater starts to flow into drainage systems, gross pollutants such as trash, plastic bags, bottles and cans. are removed by physical method. To be more specific, the covers of sewages have holes to filter large gross pollutants from entering sewage pipes. In some countries, blue-collar workers open the covers and go inside the sewages to clear small gross pollutants away by using baskets.

NSW Environment Protection Authority introduced a report of Managing Urban Stormwater: Treatment Techniques in 1997. The Primary Stormwater treatment measures (STMs) includes:

- litter basket—a basket installed within an inlet pit to collect rubbish directly entering the stormwater system from road surfaces
- litter (control) pit—a basket is located in a stormwater pit, where it collects litter from the upstream piped drainage system
- litter (trash) rack—a vertical rack installed across a stormwater channel (or at the downstream end of a sediment trap), generally with vertical bars
- sediment trap (forebay)—structure placed within the stormwater system or upstream of other STMs to trap coarse sediment, being either a formal 'tank' or a less formal pond
- gross pollutants trap (GPT)—sediment trap with a litter rack, usually located at the downstream end of the trap
- litter boom—floating device installed in channels and waterways to collect floating litter and oil

- catch basin—drainage pit with depressed bases to collect sediment. Conventional catch basins might have limited applicability in Australia
- oil/grit separators (water quality inlets)—generally comprise three underground retention chambers designed to remove coarse sediment and hydrocarbons. Conventional oil/grit separators might have limited applicability in Australia [45].

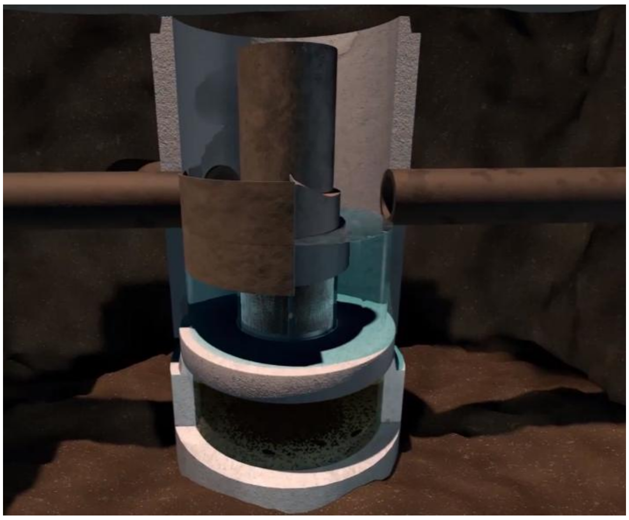


Figure 4: CDS hydrodynamic separator [46]

In addition to the above practices, a hydrodynamic separator, graphically described in Figure 4, has been used to remove heavy suspended sediments, debris, trash, and hydrocarbon by swirl concentration and a continuous deflective in recent years [47]. Stormwater runoff enters the system via an inlet flume to a unit separation chamber where swirling vortex is created. In the system center, a very fine indirect screen deflects pollutants, which rotate and are trapped inside the chamber. At the same time, the sediment settles in a bottom sump due to the combination between swirling concentration and indirect screening. Finally, stormwater moves under a hydrocarbon baffle to flow out of the system. Proper maintenance is required to remove settled sediment and floatable pollutants inside the system.

4.3 Secondary treatment

In the second step of STMs, treatment devices are used to remove fine particles, sediment, and attached pollutants. Previous studies mostly defined fine particles as airborne particles with 2.5 µm diameter or less ($PM_{2.5}$). It comes from vehicle exhausts, power plants, and fuel burning activities. There are various secondary stormwater treatments, for example, filter strips, grass swales, extended detention basins, sand filters, infiltration trenches, infiltration basins, porous pavement, and rainwater tanks.

4.3.1 Filter strips and swales

The two most popular devices are strips and swales. Filter strips, also called buffer zones or buffer strips, are grassed surface features that treat overland sheet flow. The overland flow is defined as the flow on the land surface without a defined channels, the stormwater spread over the surface at an invariable depth. Filter strips remove sediment due to vegetation since it filters solids, reduces runoff, and takes up nutrients from stormwater. Residence time, non-scouring velocities, grass density, and soil types are contributing factors [45; 48]. The following are the advantages and disadvantages of the approach [45].

- Advantages:
  - Suitable for shallow overland flow
  - Slowing the flow and reducing the volumes
  - Removing particulate matter and associated pollutants effectively
  - Pre-treating runoff for other STMs
  - Catchment area up to 2 ha (0.02 km^2)
- Disadvantages:
  - Low efficiency at removing $PM_{2.5}$ and dissolved pollutants
  - Land consumption and limited vehicular access
  - High sunlight demanding
  - Annual vegetation maintenance
  - Low efficiency for floods, need spreaders to reduce high dense of runoff
  - Maximum 5% slopes
  - High failure rates due to falling in maintenance, vegetation cover, achieving sheet flow, and preventing channelization.

Swales are long channels that collect and transfer water. Grass swales are water channels with densely grass. Similar to the filter strips, settling, filtration, and infiltration into the grass and subsoil occur to separate pollutants from stormwater, in other words, grass enable pollutants to bind to organic matter and soil particles which are removed. Swales are used in metropolitan areas instead of strips and runoff collection point. Residence time, non-scouring velocities, grass density, and soil types are contributing factors [39; 45; 48]. Following are the advantages and disadvantages of the approach [39; 45].

- Advantages:

- Slowing the flow and reducing the volumes
- Removing particulate matter and associated pollutants effectively
- Pre-treating runoff for other STMs
- More beautiful than kerb and gutter
- Catchment area up to 2 ha (0.02 km^2)
- Suitable for sparse urban areas

- Disadvantages:
  - Low efficiency at removing PM2.5 and dissolved pollutants
  - Land consumption and limited vehicular access
  - High sunlight demanding
  - Annual vegetation maintenance
  - Low efficiency for floods, need spreaders to reduce high dense of runoff
  - Maximum 5% slopes
  - High failure rates due to falling in maintenance, vegetation cover, achieving sheet flow, and preventing channelization.

Figure 5: Filter strips and swales in urban landscape [48]

Combination of filter strips and grass swales (described in Figure 5) is quite common. Runoff flows in the overland sheets through the strips and go into the swales. In that way, water is filtered twice and swales can transfer water to another place. Local grass can use sediment separated from stormwater runoff for their growth. It is important to have regular maintenance to clear litter and excess silt away [48].

Filter strips and grass swales are biologically enhanced practices through physical and biological processes namely sedimentation, filtration, infiltration, degradation of organic matter, and plant growth and nutrient uptake [41]. If findings of Weiss *et al* [49] are accurate, 75% ± 20% of total suspended solids and 41% ± 33% of total phosphorus are retained by this approach. It is important to notice that the maximum catchment area is set basing on a specific condition.

4.3.2 Media filters

Sand or any other media filters (e.g. peat, limestone, and topsoi) comprise a bed of sand or other medium that separate constituents from stormwater by filtering. Efficiency of filtration depends on the filter media and its size. It is obvious that coarser sand have large pore space allowing high flow rate of water and large suspended particles. While fine sand can filter out small total suspended solids particles which is suitable for slow water-flow only [50]. Inflow sediments, catchment geology, soil types, pre-treatment, filtration period, and uniform flow are contributing factors to the performance of sand filters [45]. Figure 6 shows graphical model of a media filter and table 4 presents retention rates of some main pollutants.

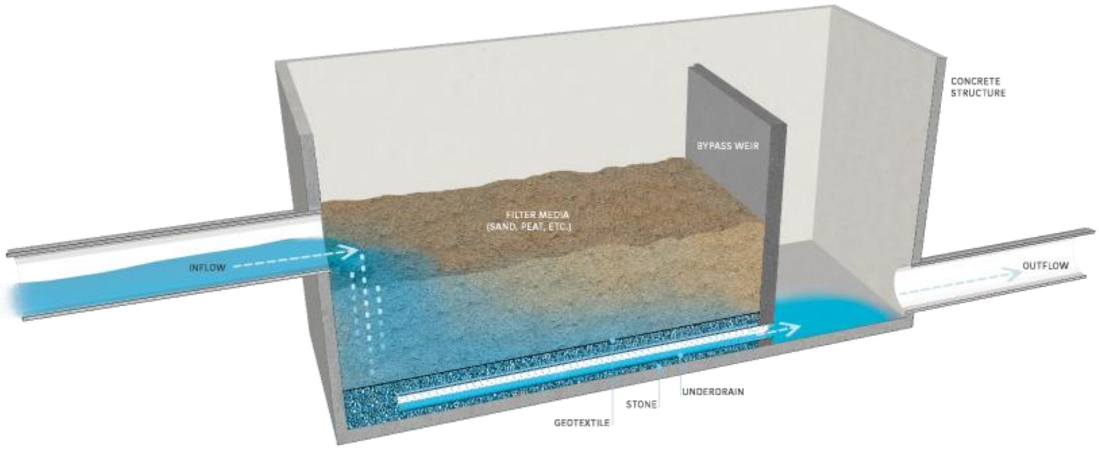


Figure 6: Media filters [51]

Following are the advantages and disadvantages of this approach [45].

- Advantages:
  - Able to hold particles
  - Suitable for insufficient or too unreliable runoff, high evaporation rate, and too pervious areas
  - Applicable for retrofitting, space-saving, and underground installation
  - Catchment area up to 25 ha (0.25 km^2)
- Disadvantages:

- Low efficiency in removing dissolved pollutants
- Upstream pre-treatment required to eliminate clogging
- Regular maintenance
- High head loss and slow flow rates after filtering
- Unappealing landscape
- High capital and maintenance cost

Table 4: Pollutants retention rates for sand filters [52]

Pollutants	Suspended solids	Total nitrogen	Lead	Zinc	Total phosphorus	Oxidised nitrogen	BOD	COD
Retention (%)	60-90	40-70	65-90	10-80	35-80	-100-0	60-80	35-70

Similar to sand filters, people can use filter drains combined with permeable surfaces to filter stormwater. Runoff flows via large permeable surfaces such as grassed or gravelled areas, or paving blocks with spaces in between. Then, stormwater runoff go through a bedding layer (sand bed), geotextile, and permeable sub-base where infiltration occurs in order to trap sediments. Pre-treatment is needed to eliminate clogging. In comparison with the sand filters, permeable surfaces are more aesthetically appealing than sand beds. [48] As seen from Figure s 6 and 7, stormwater runoff is stored underground after passing filter drains. The overflow can move to other places via subterranean channels.

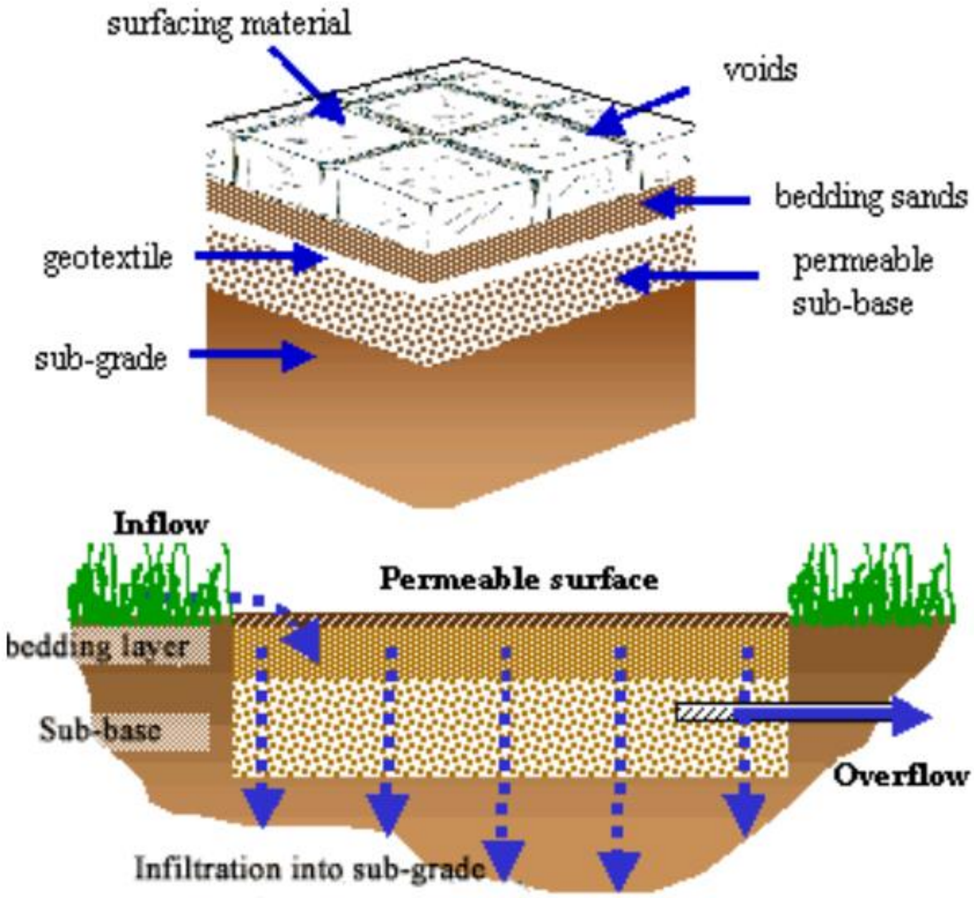


Figure 7: Filter drains and permeable surfaces [48]

Media filters including surface sand filters, underground sand filters, soil filters, hybrid filters, and enhanced sand filters are filtration practices. According to Weis et al [49], approximately 82% ± 14% of total suspended solids and 46% ± 21% of total phosphorus are removed by sand filters.

4.3.3 Infiltration devices

Regarding infiltration devices, water goes directly into the buried devices with porous material inside. Soakways and infiltration trenches are the main components with two functions, described in figure 8. The first one is storing and the other is letting stormwater infiltrate into the surrounding soil and ground. This infiltration trenches can be in form of simple gravel-filled system or bio-retention system. It can increase groundwater volume as well as reduce stormwater flow rates. Pre-treatment, soil geochemistry, deep water table, and infiltration time are contributing factors.

Maintenance is under requirement to remove and wash clogged media and protect infiltration capacity. [39; 45; 48]

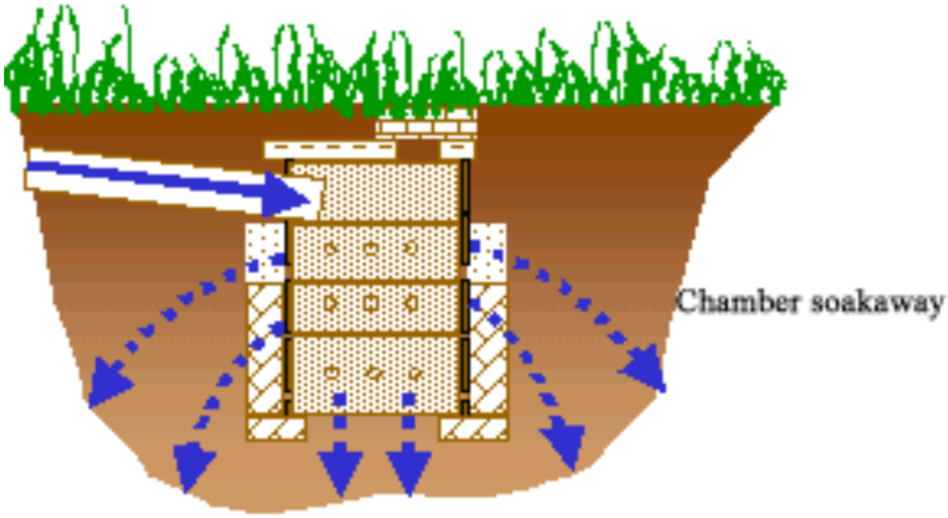


Figure 8: Cross section through a traditional soakway or a chamber soakway [53]

The following are the advantages and disadvantages of this approach [45].

- Advantages
  - Removal of particulates and some dissolved pollutants effectively
  - Reduction of runoff and recharge of groundwater
  - Suitability for moderate permeable soil and underground installation areas
  - Catchment area up to 2 ha (0.02 km^2)
- Disadvantages
  - Easy clogging
  - Inapplicability for high sediment yields
  - Contamination of groundwater easily and low removal rate in coarse soils
  - Risk of metals accumulation
  - No steep slope and unappropriated design
  - High failure rates because of inadequate maintenance

Infiltration devices are one of infiltration practices to remove pollutants from stormwater. According to the results from the study of Milsson and Stigsson [54], infiltration trenches can remove approximately 86% of the total suspended solids while total phosphorus removal efficiency is not presented.

4.3.4 Stormwater basins and ponds

Basins are temporary water storages whilst ponds store water permanently. The working principles are capturing stormwater, attenuating runoff, controlling downstream flow, and holding pollutants. Sediment basins are ponds that allow sedimentation to occur while infiltration basins infiltrate runoff through the basin floor. Basins and ponds usually combine with constructed wetlands or raingarden to remove large sediments before treating nutrients and toxins [39; 45; 48]. The process is described in Figure 9.

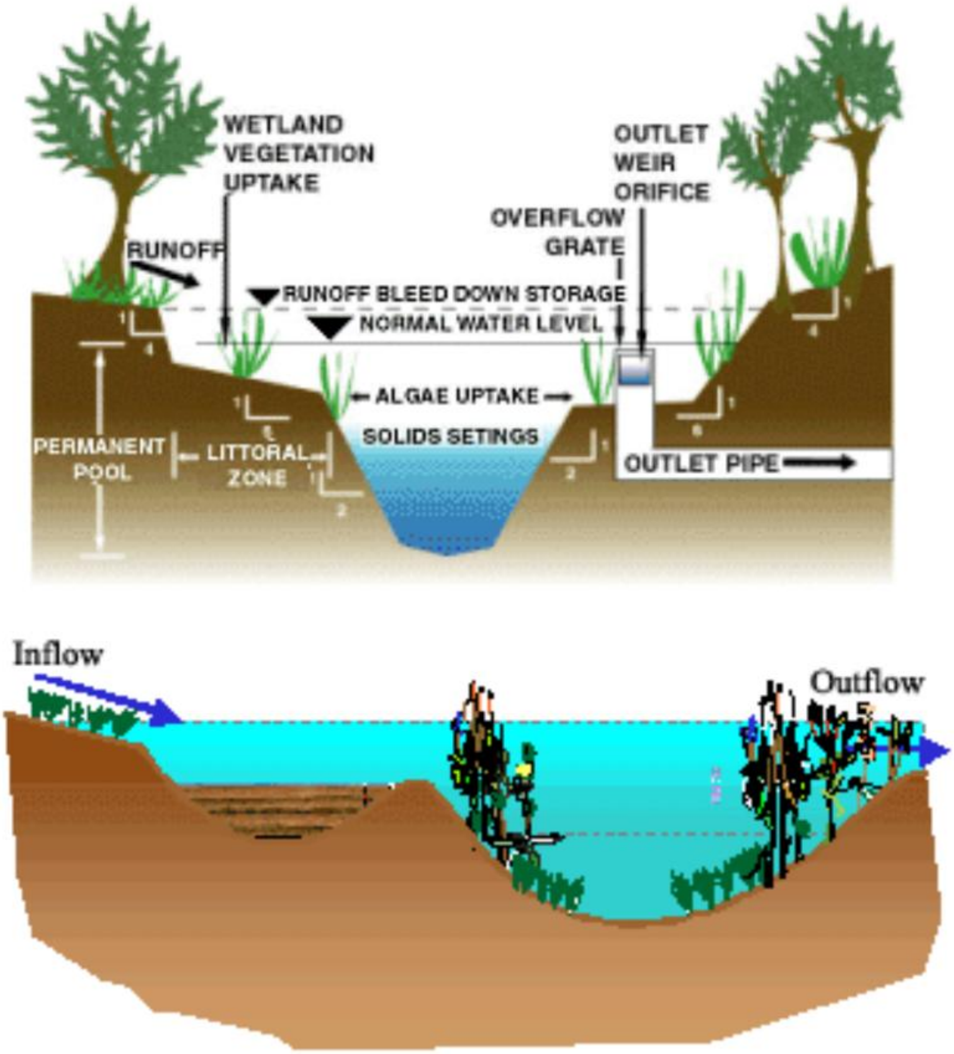


Figure 9: Pound, basin and constructed wetland for stormwater treatment [48]

Following are the advantages and disadvantages of this approach [45].

- Advantages
  - Removal of particulates and some dissolved pollutants effectively
  - Reduction of runoff and recharging groundwater
  - Suitability for moderate permeable soil areas
  - Catchment area up to 5 ha (0.05 km2)

- Disadvantages
  - Easy clogging
  - Inapplicability for high sediment yields
  - Contaminating groundwater easily and low removal rate in coarse soils
  - Risk of metals accumulation
  - No steep slope and insecure areas
  - Land-consumption
  - High failure rates because of inadequate maintenance

Basins and ponds are sedimentation and infiltration practices. Weiss et al hold the view that wet ponds can retain 65% ± 32% of total suspended solids and 52% ± 23% of total phosphorus [49].

4.3.5 Porous paving

Porous pavements, whose section is depicted in figure 10, is an alternative to impermeable pavements allowing stormwater runoff to percolate through a coarse pavement, infiltrate to the underlying soil, and be filtered back to the drains. Stormwater passes though the surface of porous pavers, sand or gravel, and geotextile fabric. Partial runoff go into overflow pipe to enter drainage systems. The remaining runoff continue passing retention trench and geotextile fabric before being infiltrated into subsoil. There are several types of porous paving, namely monolithic structures (porous asphalt or concrete), modular pavers (Hydrapave or plastic block), and grid or lattice systems (concrete grid) [39; 45]. [55] introduces three types of porous pavement.

Porous Asphalt or Concrete (Monolithic Structures)	Open graded asphalt or concrete with reduced or no fines and a special binder that allows water to pass through the pavement by flowing through voids between the aggregate
Modular Pavers	Pavers may be made of porous material or where pavers themselves are not permeable, are installed with gaps between the pavers to allow stormwater to penetrate into the subsurface.
Grid or Lattice Systems	These are made of concrete or plastic grids filled with soil or aggregate that water can percolate through. These systems may also be vegetated (usually with grass).

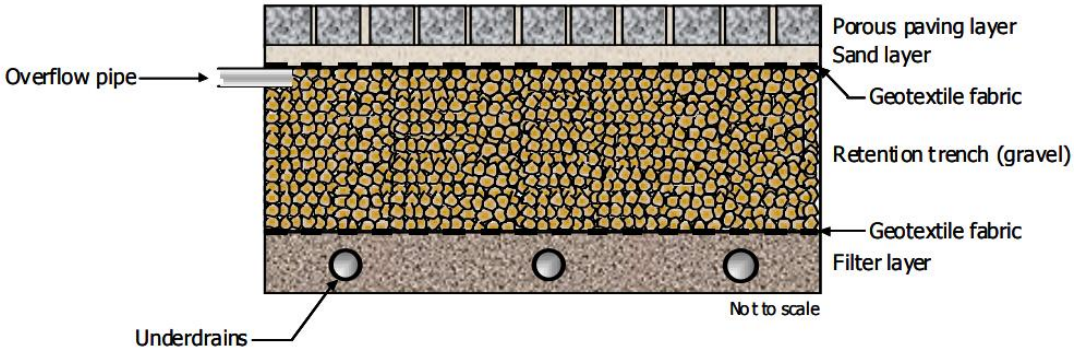


Figure 10: Typical porous paving section [55]

Following are the advantages and disadvantages of this approach [45].

- Advantages
  - Suitability for low traffic volume and light vehicle weight
  - Maximum 5% slopes
  - Reduction of runoff and recharge of groundwater
  - Catchment area from 0.1 to 4 ha (0.001-0.04 km2)
- Disadvantages
  - High failure rates because of limited infiltration and inadequate maintenance
  - Unsuitability for significant sediment loads
  - Easy contamination of groundwater easily
  - Pavement deflection because of heavy traffic weight

Table 5: Pollutants retention rates for porous pavement [52]

Pollutants	Suspended solids	Total nitrogen	Lead	Zinc	Total phosphorus	Oxidised nitrogen	BOD	COD
Retention (%)	50-95	<0-85	50-98	62-99	50-71	-	>>82	>>80

Permeable pavements are infiltration practices. Table 5 presents removal performance of porous paving. Although this practice is suitable to at most 0.04 km2 and light traffic weight, permeable pavements can be placed sparsely beside airport runways, where aircrafts and heavy vehicles are not allowed to run on.

4.4 Tertiary treatment

In the final stage of STMs, extremely fine/colloidal particulates, dissolved nutrients and heavy metals are removed through enhanced sedimentation and filtration, biological uptake, and absorption onto sediments [39]. Constructed wetlands, bioretention practices, bioinfiltration practices, and biofiltration practices are commonly used as biological enhanced practices. In addition, three biological processes occur in the tertiary treatment namely degradation of organic matter, denitrification, and plant growth and nutrient uptake. [41]

4.4.1. Constructed wetlands

Wetlands are shallow areas with high groundwater level presenting as permanent pools. Constructed wetlands are series of inlet zone, macrophyte zone, and high flow bypass channel. Figure 11 graphically explains a constructed wetland system. Stormwater runoff passes through a sediment basin for coarse sediment removal. Then, it flows to a shallow pond with densely planted aquatic plants for fine particle and dissolved pollutant removal. Finally, excess water flow around the wetland or flows away. These work on physical level, biological and chemical uptake level, and pollutants transformation level. Flow distribution, retention time, pre-treatment, organic matter loading, and operation & maintenance are contributing factors [39, 45].

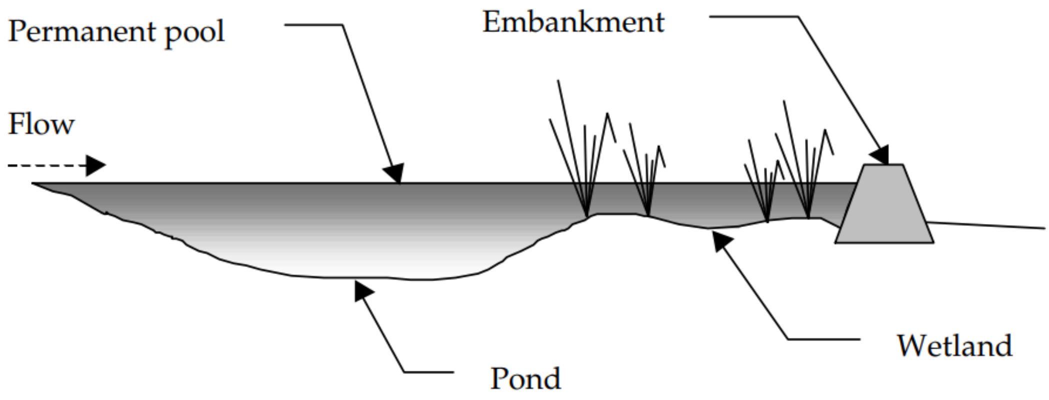


Figure 11: Constructed wetland system [45]

The following are the advantages and disadvantages of this approach [45].

- Advantages:
  - Keeping sediment and nutrients
  - Effectiveness for several runoff event sizes
  - Aesthetical appeal
  - Control of flood and downstream flow

- Catchment area larger than 5-10 ha (more than 0,1 km2)
- Disadvantages:
  - Need for pre-treatment to clear coarse sediment away
  - Remaining wet
  - Possible effects on public health and safety (such as mosquito-borne diseases)
  - Possible effects on groundwater and wetland
  - Land-consumption

Constructed wetlands are usually used after gross pollutants traps and sediment ponds to have higher efficiency. Sediment larger than 125um should be removed before entering the macrophyte zone. Retention time is approximately 72 hours and flow velocity is under 0.5 m/s in this zone. [39] It is important to discard nutrients and metals from the wetland; otherwise it will become pollutants source.

Constructed wetlands are biologically enhanced practices. If the findings of Weiss et al [49] are accurate, 68% ± 25% of total suspended solids and 42% ± 26% of total phosphorus are retained by constructed wetlands.

4.4.2. Bioretention practices

Bioretention systems are also called as raingardens with specially-designed garden beds. Stormwater runoff is filtered by soil, plants and microbes to eliminate nutrients, rubbish and sediment from entering waterways. At the beginning, stormwater fall on garden surface, soak through vegetation and filter media. Then, plants absorb the nutrients while soil keeps the toxins. Therefore, fertilisers or herbicides should not be used. Raingardens need some space above to collect and settle stormwater. Generally, bioretention practices include bioinfiltration and biofiltration practices. A cross section of raingarden is represented in Figure 12. Bioinfiltration systems do not have underdrains. Therefore, excess water goes into the underlying soil recharging groundwater, which is difficult to check water quality after being treated. On the other hand, biofiltration systems have underdrains. Therefore, one can collect and check water quality after passing through the soil layer and plants. According to Hunt et al.," Biofiltration practices can denitrify the water that is retained between storm events when a drain is designed with an upturned inlet" [39; 41; 56].

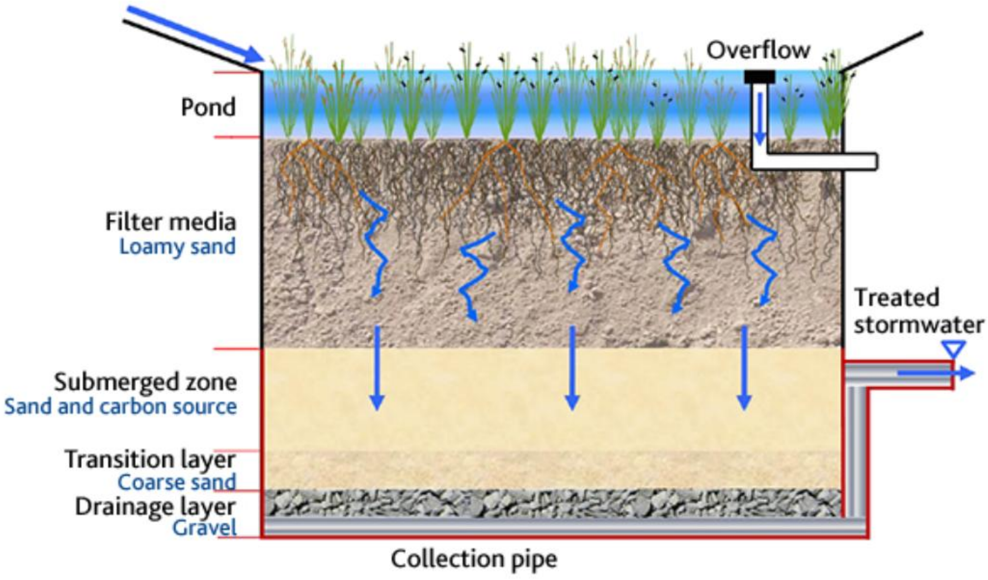


Figure 12: Cross section of rain garden [39]

The following are the advantages and disadvantages of this approach [39; 41; 57].

- Advantages:
  - Space-saving, size range from 1 to 100 m2
  - Capture of suspended solids, break down of pollutants, and absorbance of nutrients
  - Reduction of runoff volume
  - Possible increasing of groundwater
  - Visual attraction

- Disadvantages:
  - Proper maintenance for garden beds, plants, pits, and pipes to remove trash and sediment
  - Necessity of upstream treatment
  - Unsuitability for flat areas, high sediment loading, high and constant flow, and construction sites upstream regions
  - Small catchment area

Blecken et al [58] holds the view that biofiltration systems work well in winter whereas Muthanna et al. [59] conducted a research and proved that low temperature affect negatively biofiltration performance. Prevention of ice formation inside soil media is recommended by Blecken et al [60] to ensure filtration ability. Bioretention practices are also biologically enhanced practices. According to Weiss et al, this practices can hold 68% ± 25% of total suspended solids and 42% ± 26% of total phosphorus [49].

Minnesota Pollution Control Agency has published a manual to answer question "How to select Best Management Practices?" Table 6 illustrates the comparison between different practices in five aspects including maintained ability, residential agreement, budget, environment condition, and constrains.

Table 6: Comparison between BMPs basing on community and environmental factors [61]

BMP group	Ease of maintenance	Community acceptance	Construction cost	Habitat quality	Nuisance
Bioretention	Medium	High	Medium	Medium	Mosquitoes Overgrown vegetation
Filtration media	Difficult	High	High	Low	Filter media replacement Underground practices not seen and maintained
Filtration vegetative	Medium	Medium	High	Low	Filter media replacement Underground practices not seen and maintained
Infiltration trench	Difficult	High	High	Low	Susceptible to failure if poorly installed or maintained
Infiltration basin	Medium	Low	Medium	Low	Susceptible to failure if poorly installed or maintained
Stormwater ponds	Easy to medium	Medium to high	Low	Medium	Geese Odours Mosquitoes Floatables
Constructed wetland	Medium	Medium to high	Medium	Medium	Mosquitoes Overgrown vegetation
Hydrodynamic devices	Medium	High	High	Low	Underground practices not seen or maintained

Filtration devices	Difficult	High	High	Low	Underground practices not seen or maintained

In the end, the purpose of treating stormwater runoff via sedimentation, filtration, infiltration, and biological enhanced practices is to enhance water quality. Depending on the outlet requirement, the treating methods may differ. Treated stormwater runoff might enter natural water pathways such as rivers, lakes, and ocean or being consumed by flora, fauna, and human.

4.5 Case studies

In this thesis, Edmonton International Airports (EIA) in Edmonton, Canada and Buffalo Niagara International Airports (BNIA) in New York, USA will be focused as good illustrations of stormwater treatment in winter condition airports.

To begin with, deicing agent is the most significant source of glycol that EIA have to treat. Even though some portion of deicing fluid is recovered from deicing pads, the fluid and accumulated snow go into the main stormwater collection and containment system. EIA chose natural wetland as an effective solution from 2000 to 2011. Lately, because of airport expansion, the wetland is upgraded to subsurface aerated biofilter treatment facility with some pros and cons. [62] In addition, EIA conducted an assessment to assure no significant impacts on air, land, water, wildlife, and neighbors [63]. Figure 13 shows subsurface aerated biotreatment facility in EIA.

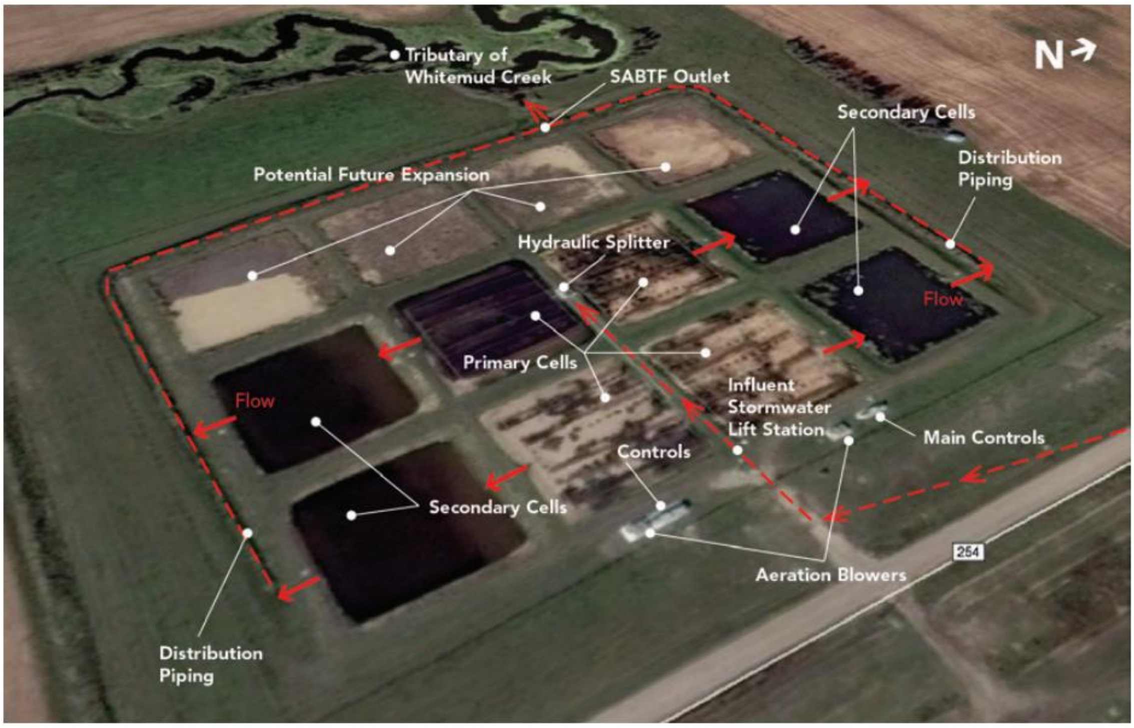
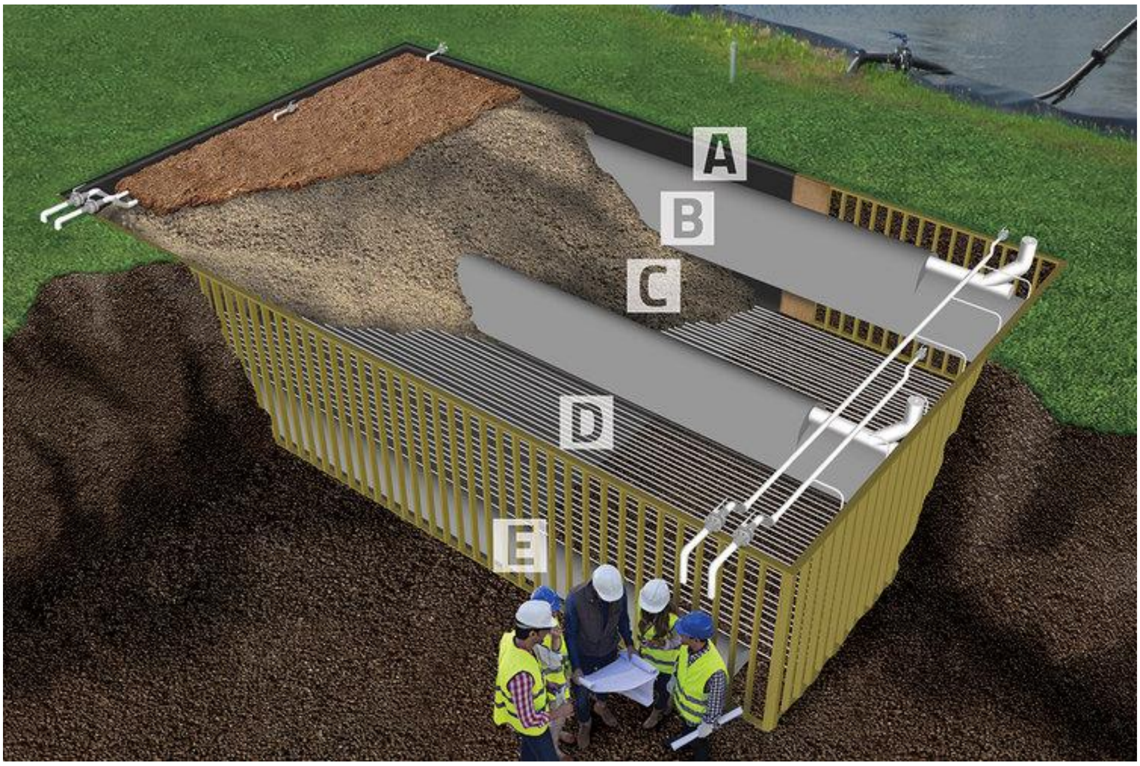


Figure 13: Subsurface Aerated Biotreatment Treatment Facility [62]

The following are the advantages and disadvantages of this solution in EIA [62].

- Advantages:
  - Improvement of treatment capacity
  - Reduction of treatment time
  - Potential for future expansion
  - Environmental friendliness
- Disadvantages:
  - Unfavorable scent of common alcohol and vinegar from glycol breaking down
  - Difficulty in determining the scent and gas leak

The second example is stormwater treatment planning in BNIA. In 2009, over 13 million dollars was spent to fulfill regulatory discharge demand. BNIA needs an affordable solution to treat deicing fluid in stormwater in different weather conditions. Nexom cooperated with Urban Engineers, and Stantec in order to provide a novel robust on-site and cost effective solution called SAGR. The system includes gravel bed to reduce growth of heterotrophic bacteria, underground storage to store and control flow, grit removal chambers to clear particulate matter, pumps, and SAGR hydraulics (depicted in figure 14). SAGR is not only a post-lagoon cold-water nitrification system but also an effective and simple solution of BOD-rich deicing agent treating for other airports [64].



A. HDPE liner prevents infiltration while sacrificial walls help the SAGR maintain its shape during construction.

B. Influent distribution chamber ensures influent is spread across the width of the bed.

C. Clean stone provides surface area for bacteria while preventing temperature shock. Mulch-covered for insulation.

D. Linear aeration covers the base for fully-aerobic conditions.

E. Effluent collection chamber is gravity fed to minimize O&M.

Figure 14: Cutaway view of a SAGR [65]

The following are the advantages of this solution in BNIA [64]:

- Advantages:
  - Treatment of high flush flow, low concentration of propylene glycol and BOD in spring
  - Treatment of low flush flow, high concentration of propylene glycol and BOD_5 in winter
  - Compliance with regulatory requirements
  - Elimination of wildlife attraction because of on-site treatment
  - Less fouling.

Unfortunately, any disadvantages of SAGR system cannot be found. Nexom has published many benefits of the system without mentioning about downsides. More research should be done to provide a multidimensional view about SAGR efficiency and applicability.

5 Topographic and local condition

Turning to local conditions of Vantaa airport, nearby area conditions including flora and fauna, groundwater, contaminated land, water ways and small inland water habitats are illustrated in order to choose the most suitable stormwater solution for this area. Biological diversity of Vantaa can be seen from abundance of nature reserves and endangered species protection. The Helsinki-Vantaa airport was attached to HSY water system. Water intake plants are responsible for groundwater quality. Pesticides, chlorinated solvents, and radon contents are a deteriorating factor for the quality of groundwater. Grönberg lead smelter was a tremendous source of soil contamination. The most common method to treat contaminated soil is replacing them with fresh clean one. The City of Vantaa public environmental regulations and guide to ensure good condition of surface water and ground water:

> The City of Vantaa's stormwater program aims at better management of stromwater, enhancing the quality of stormwater, decreasing the amount of stormwater, increasing urban biodiversity, improving groundwater quality, and maintaining the surface level of groundwater. Further objectives consist of: increasing appreciation for waterways, utilizing stormwater as a positive resource, functioning cooperation and flow of information between authorities, and developing Vantaa's stormwater operating model [66].

According to Finnish Meteorological Institute, one can get observations of precipitation on the website *https://en.ilmatieteenlaitos.fi/download-observations#!/*. In order to choose the most suitable solution of stormwater treatment, the environmental engineer should consider about the maximum rainfall intensity per day to avoid flooding or excess runoff on ground surface.

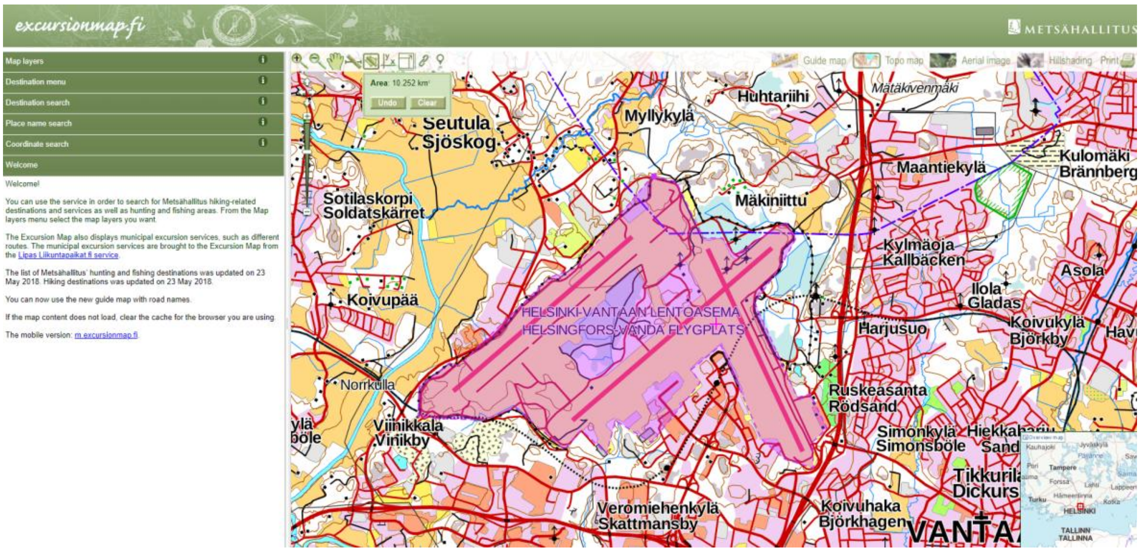


Figure 15: Topographic map of Helsinki-Vantaa airport

Observation station: Vantaa Helsinki-Vantaa lentoasema

Station ID: 100968

Latitude: 60.32670

Longitude: 24.95675

Precipitation: mm

Snow depth: cm

From period 1.1.2010 to 25.9.2018, the highest precipitation in summer is 53 mm/d on 16.6.2016, and that in winter is 26.6 mm/d on 12.12.2017 [Appendix 1]. According to *retkikartta.fi*, the total area of Vantaa airport is approximately 10.252 km^2 by using the area measurement tool. Therefore, the maximum volume of stormwater falling on the airport including pervious and impervious surface in one day is

26.6 mm/d * 10.252 km^2 = 26.6 * 10.252 * 0.001 m/d * 1000000 m^2 = 272.7032 * 1000 m^3/d = 272703.2 m^3/d ≈ 270 000 m^3/d

In order to measure slopes of Helsinki-Vantaa Airport, one can use Google Earth application with Add Path tool. Topographic map of Helsinki-Vantaa airport is depicted in Figure 15. Firstly, assume that the airport have shape of a right triangle with one 90° angle on the top. Then, create two squared angle lines called Line 1 (pink) and Line 2 (orange). Create a hypotenuse called Line 3 (green). Next, right click on each line to show elevation profile. Then, one can calculate the slope of each line by using equation: percentage slope = Rise/Run * 100

Slope 1 = $\frac{204\,ft - 142\,ft}{2.7 * 5280\,ft} * 100 = \frac{62\,ft}{14256\,ft} * 100 = 0.4\%$

Slope 2 = $\frac{199ft - 133\,ft}{2.52 * 5280\,ft} * 100 = \frac{66\,ft}{13305.6\,ft} * 100 = 0.5\%$

Slope 3 = $\frac{140\ ft - 146\ ft}{3.23 * 5280\ ft} * 100 = \frac{6\ ft}{17054.4\ ft} * 100 = 0.035\%$

As can be seen, slopes in the airport do not exceed the slope limit of 5% required by some stormwater treatment practices. Please check Appendix for Elevation profile of Line 1, 2, and 3.

6 Discussion

The main goal of this thesis was to select the most suitable stormwater treatment process for airports in winter condition countries, especially Helsinki-Vantaa International Airport. Engineering designers should follow six steps of the selection process to choose the most applicable stormwater treatment methods, as introduced in [39]:

Step 1: Determine treatment objectives such as achieving regulatory and policies
Step 2: Comprehend the catchment nature for example catchment area and physical constraint
Step 3: Shortlist suitable treatment measures as in Section 4 of this thesis
Step 4: Decide the optimal treatment measures basing on operability, maintenance, efficiency, costs, and other benefits
Step 5: Select manager and project team to manage and maintain the system
Step 6: Establish a comprehensive design

Table 6a: Comparison between stormwater treatment practices

Practices	Pollutants removal	Recharge ground water	Contaminate ground water	Reduce runoff	Maintanence	Pre-treated requirement	Cost
Filter strips and swales	Effectively: particulate matter & associated pollutants. Ineffectively: fine sediment & dissolved pollutants	No	No	Yes: small storm. No: flood	Medium	-	High
Media filters	Effective: hold particles. Ineffective: dissolved pollutants (dissolved nutrients)	No	No	Yes: suitable for unreliable runoff	Difficult	Yes	High
Infiltration trenches	Effective: particulates & dissolved pollutants. Ineffective: high sediment yields	Yes	Yes	Yes	Difficult	-	High
Basins and ponds	Effective: particulates & dissolved pollutants. Ineffective: high sediment yields	Yes	Yes	Yes	Medium	Yes	Medium
Porous pavements	Effective: particulates & dissolved pollutants. Ineffective: high sediment yields	Yes	Yes	Yes	-	Yes	
Constructed wetlands	Effective: fine sediment & nutrients.	-	Maybe	Yes	Medium	Yes	Medium
Bioretention	Effective: suspended solids & nutrients.	Yes	Maybe	Yes	Medium	Yes	Medium

Table 6b: Comparison between stormwater treatment practices (continued)

Practices	Vegetation	Airport safety (prevent wildlife attraction)	Space	Catchment area	Slope	Visual attractivity	Heavy vehicle load
Filter strips and swales	Yes	No	land-consuming	max 2 ha	max 5%	-	No
Media filters	No	Yes	land-saving	max 25 ha	-	No	-
Infiltration trenches	No	Yes	land-saving	max 2 ha	no steep	-	-
Basins and ponds	Yes	No	land-consuming	max 5 ha	no steep	-	No
Porous pavements	No	Yes	land-saving	0.1 - 4 ha	max 5%	-	No
Constructed wetlands	Yes	No	land-consuming	more than 10 ha	-	Yes	No
Bioretention	Yes	No	land-consuming	-	-	Yes	No

As is shown in Table 6a and 6b, one can compare seven treatment practices on the basis of 17 criteria. It is essential to reemphasize the aim of this research is choosing the most suitable practices for airports in winter condition countries. In winter, there is no appearance of grasses or bushes. In addition, opened water surfaces attract water birds, which is unsafe for airport operation. Moreover, the airport surface, especially runways, should not have any obstacle. It can therefore be assumed that vegetation, airport safety, and space are the most meaningful criteria in making a decision. Others such as pollutants removal, recharge ground water, maintenance, and cost are secondary contributing factors. The slope limitation of the practices do not exceed 5% which is suitable to flat surface of the airports. The practices are able to reduce runoff volume and require pre-treatment for preventing clogging. The maximum of catchment area is set depending on a particular condition. Catchment area can be enhanced by increasing size of the treatment systems, installing several systems sparsely, or setting up temporary stormwater storage before being treated.

Comparison of the stormwater treatment practices (Table 6) with the airport conditions (Section 5) confirms that Media filters, Infiltration trenches, and Porous pavements are the most applicable solutions. The reasons are no vegetation, no opened water surface, and space-saving. The biological enhanced practices cannot be applied since they need grassed support. Treatment train can be used to improve efficiency. Stormwater runoff may enter hydrodynamic separators first to remove grossed pollutants and coarse sediment as the separators are underground systems. Then, water flow to media filters, infiltration trenches, or porous paving to remove fine sediment and attached pollutants. During heavy storm events, runoff might be stored in temporary underground storages to reduce the volume. Alternatively, the several treatment systems can be installed beside the aircraft runways to increase treating efficiency.

It is interesting to note that the stormwater treatment practices do not have to treat all the amount of stomwater. As shown in Figure 15, there are some plants in the middle of Helsinki-Vantaa airport. The plants absorb and retain a part of stormwater which can reduce stress on media filters, infiltration devices, and porous pavements. In addition, the temperature also affects volume of treated stormwater, since the solutions treat only liquid water. Stormwater in the form of ice or snow require more time for warmer temperature to be melted. Therefore, the selected solution does not have to treat all stormwater runoff at the same time during winter. However, melting snow usually comes along with falling rain during spring, which increases stormwater runoff significantly. In this case, provisional underground water storages are thoroughly used. Last but not least, the storages, the separators, and the filtered devices are accurately maintained in order to remove trash, debris, and clogging substances.

The result of this study can be applied for any airport having the same conditions as Helsinki-Vantaa International Airport. However, this study has limited access to detailed rainfall intensity in Vantaa airport such as the length of storm events. Besides, tertiary treatment practice is not taken into account resulting in no removal of nutrients and dissolved heavy metals. There is abundant room for further progress in designing a stormwater treatment system for the airports.

7 Conclusion

The main goal of the current thesis was to determine the most applicable stormwater treatment methods for airports in winter condition countries. This study has shown that the combination between hydrodynamic separators and media filters, or infiltration devices, or porous pavements performs well in Helsinki-Vantaa International Airport. The result of this study can be applied in airports having similar condition with Vantaa airport. This study lays the groundwork for future research into planning and designing stormwater treatment solutions in the airports. This study was limited by the absence of the length of storm events in order to define which type of stormwater had occurred. Lack of tertiary treatment practice in the treatment train prevents removal of nutrients and dissolved heavy metals from stormwater runoff. Notwithstanding these limitations, the thesis suggests that the sequence of hydrodynamic separators and the selected secondary treatment practices can improve stormwater quality before entering natural water bodies. However, additional treatment should be done before being consumed by human.

References

1. What is Stormwater? [Internet]. Greenville County Soil and Water Conservation District [cited on 2018 Jun 12]. Available from: http://www.greenvillesoilandwater.com/what-is-stormwater/.

2. Hunt. William F. Introduction to Stormwater Management. [Internet]. 2010. [cited on 2018 Jun 12]. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1936-704X.2010.00386.x.

3. Critchley Will, Siegert Klaus, Chapman C. Water harvesting [Internet]. Rome: Food and agriculturre organization of the United Nations; 1991 [cited on 2018 Jun 12]. Available from: http://www.fao.org/docrep/u3160e/u3160e00.htm#Contents

4. Intensity of rainfall. Flood site [Internet]. Sixth Framework programme [cited on 2018 Jun 12]. Available from: http://www.floodsite.net/juniorfloodsite/html/en/teacher/thingstoknow/hydrology/rainfallintensity.html

5. Annual maximum three-day rainfall [Internet]. Stats NZ Social Indicators. [cited on 2018 Jun 19]. Available from: http://archive.stats.govt.nz/browse_for_stats/environment/environmental-reporting-series/environmental-indicators/Home/Atmosphere-and-climate/rainfall-intensity/three-day-rainfall-archived-Oct17.aspx

6. Koutsoyiannis Demetris, Kozonis Demosthenes, and Manetas Alexandros. A mathematical framework for studying rainfall intensity-duration-frequency relationships [Internet]. Greece: Department of Water Resources, National Technical University; 1998 [cited on 2018 Jun 19]. Available from: https://www.sciencedirect.com/science/article/pii/S0022169498000973

7. Dairaku Koji. Rainfall Amount, Intensity, Duration, and Frequency Relationships in the Mae Chaem Watershed in Southeast Asia [Internet]. Japan: Atmospheric Environment Division, National Institute for Environmental Studies; 2004 [cited on 2018 Jun 19]. Available from: https://journals.ametsoc.org/doi/full/10.1175/1525-7541%282004%29005%3C0458%3ARAIDAF%3E2.0.CO%3B2

8. YouTube. “Measuring rainfall” Online video clip. YouTube, 23 Sep 2010.Web. 28 Jun 2018.

9. How to use the IFD tool [Internet]. Australian Government Bureau of Meteorology [cited on 2018 Jun 28]. Available from: http://www.bom.gov.au/water/designRainfalls/ifd/howtoIFDTool.shtml

10. Stormwater pollutants monitoring stormwater 360° between sky and sea [Internet]. New Zealand: New Zealand Planning Institute [cited on 2018 Jun 28]. Available from: https://www.planning.org.nz/Attachment?Action=Download&Attachment_id=4623

11. City of Gresham, Department of Environmental Services, Watershed Division. Stormwater Monitoring and Quality Assurance Plan [Internet]. USA; 2011 [cited on 2018 Jun 28]. Available from: https://greshamoregon.gov/WorkArea/DownloadAsset.aspx?id=2310

12. Industrial stormwater monitoring and sampling guide [Internet]. USA: final draft; 2009 [cited on 2018 Jun 28]. Available from: https://www3.epa.gov/npdes/pubs/msgp_monitoring_guide.pdf

13. Kellogg Brown & Root Pty Ltd. Manningham stormwater management plan monitoring and review program final report [Intenet]. Australia: Manningham City Coucil; 2003 [cited on 2018 Jun 28]. Available from: https://www.manningham.vic.gov.au/file/1731

14. Finnish Meteorological institute. Climate elements. [Internet]. [cited on 2018 Sep 27]. Available from: https://en.ilmatieteenlaitos.fi/climate-elements

15. Finnish Meteorological institute. Normal period. [Internet]. [cited on 2018 Sep 27]. Available from: https://en.ilmatieteenlaitos.fi/normal-period

16. Finnish Meteorological institute. Present climate - 30 year mean values [Internet]. Climateguide.fi [cited on 2018 Sep 27]. Available from: https://ilmasto-opas.fi/en/ilmastonmuutos/suomen-muuttuva-ilmasto/-/artikkeli/1c8d317b-5e65-4146-acda-f7171a0304e1/nykyinen-ilmasto-30-vuoden-keskiarvot.html

17. Janíc Milan. Airport Analysis, Planning and Design : Demand, Capacity and Congestion [Internet]. New York: Nova Science Publishers; 2009 [cited on 2018 Aug 10]. Available from: https://ebookcentral.proquest.com/lib/metropolia-ebooks/reader.action?docID=2194179&quer

18. Janíc Milan. Greening Airports [Internet]. London: Springer; 2011 [cited on 2018 Aug 10]. Available from: https://link.springer.com/book/10.1007%2F978-0-85729-658-0#toc

19. Larm, T. Watershed-based design of stormwater treatment facilities: model development and applications. Stockholm, Sweden: Doctoral Thesis. Division of Water Resources Engineering. Department of Civil and Environmental Engineering. Royal Institute of Technology. S-100 44. ISBN 91-7283-027-1. [cited on 2018 Aug 28]

20. Valtanen, M. . Effects of urbanization on seasonal runoff generation and pollutants transport under cold climate. Helsinki, Finland: Doctoral dissertation. University of Helsinki. Faculty of Biological and Environmental Sciences. Department of Environmental Sciences. ISBN: 978-951-51-0862-3. [cited on 2018 Aug 28]

21. Lind, B.B., Backstrom, M., Geisler, E. . First Flush Effect Of Metals And Anions In Storm Water Runoff From Roads In Mid-Sweden. 2001. Presented at the Seventh International Conference on Urban Transport and the Environment in the 21st Century. doi:10.2495/UT010471. [cited on 2018 Aug 28]

22. Hallberg Magnus, G.R. . Seasonal Variations of Ten Metals in Highway Runoff and their Partition between Dissolved and Particulate Matter. Water. 2007. Air. Soil Pollut.181, 183–191. doi:10.1007/s11270-006-9289-5. [cited on 2018 Aug 28]

23. Suihko Maria. Biofiltration for stormwater management in Finnish climate [Internet]. Espoo, Finland: Aalto University School of Engineering, Master thesis; 2016 [cited on 2018 Aug 28]. Available from: https://aaltodoc.aalto.fi/bitstream/handle/123456789/23953/master_Suihko_Maria_2016.pdf?sequence=1&isAllowed=y

24. Deicer report [Internet]. California, USA: California Department of Transportation Fiscal year 2010/2011 [cited on 2018 Aug 28]. Available from: http://www.dot.ca.gov/hq/env/stormwater/annual_report/attachments/ar_d3deicer.pdf

25. Wikipedia. Deicing [Internet]. [cited on 2018 Aug 28]. Available from: https://en.wikipedia.org/wiki/Deicing

26. Wikipedia. Deicing fluid [Internet]. [cited on 2018 Aug 28]. Available from: https://en.wikipedia.org/wiki/Deicing_fluid

27. Conover, M. R. . Resolving human– wildlife conflicts. CRC Press, Boca Raton, Florida, USA; 2002. [cited on 2018 Aug 31].

28. D'Angelo, G. J., D'Angelo J. G., Gallagher G. R., Osborn D. A., Miller K. V., and Warren R. J.. Evaluation of wildlife warning reflectors for altering white-tailed deer behavior along roadways. Wildlife Society Bulletin 34:1175– 1183; 2006. [cited on 2018 Aug 31].

29. Blackwell, B. F. . Understanding avian vision: the key to using light in bird management. Proceedings of the Vertebrate Pest Conference 20:146– 152; 2002. [cited on 2018 Aug 31].

30. Blackwell, B. F., T. L. DeVault, T. W. Seamans, S. L. Lima, P. Baumhardt, and E. Fernández-Juricic.. Exploiting avian vision with aircraft lighting to reduce bird strikes. Journal of Applied Ecology 49:758– 766; 2012 a. [cited on 2018 Aug 31].

31. Blackwell, B. F., and T. W. Seamans. Enhancing the perceived threat of vehicle approach to white-tailed deer. Journal of Wildlife Management 73:128– 135; 2009. [cited on 2018 Aug 31].

32. DeVault Travis L., Belant Jerrold L., , and Blackwell Bradley F. Wildlife in Airport Environments: Preventing Animal-Aircraft Collisions Through Science-Based Management [Internet]. Maryland, USA: The Johns Hopkins University Press; 2013 [cited on 2018 Aug 28]. Available from: https://ebookcentral.proquest.com/lib/metropolia-ebooks/reader.action?docID=3318785&query=

33. Wiseman Natasha. Stormwater filtration helps airport expansion clear for take-off [Internet]. Tulsa, USA: Water and wastewater international [cited on 2018 Sep 1]. Available from: https://www.waterworld.com/articles/wwi/print/volume-30/issue-4/technology-case-studies/stormwater-filtration-helps-airport-expansion-clear-for-take-off.html

34. Airport drainage [Internet]. LinkedIn; 2015 [cited on 2018 Sep 1]. Available from: https://www.slideshare.net/srinivas2036/airport-drainage-47193829

35. Cooper Steve. The importance of storm water drainage for airports [Internet]. International airport review; 2017 [cited on 2018 Sep 1]. Available from: https://www.internationalairportreview.com/article/36689/water-drainage/

36. Dempsey Barry J. and Pur Richard A.. Guidelines for Design, Construction, and Evaluation of Airport Pavement Drainage [Internet]. Virginia, USA: Department of Civil Engineering, University of Illinois; 1990 [cited on 2018 Sep 1]. Available from: http://www.dtic.mil/dtic/tr/fulltext/u2/a239598.pdf

37. Stormwater treatment: A look at various methods, hydrodynamic separators [Internet]. Water and wastes digest; 2002 [cited on 2018 Sep 4]. Available from: https://www.wwdmag.com/filters-sand-gravel/stormwater-treatment-look-various-methods-hydrodynamic-separators

38. Stormwater treatment [Internet]. SPEL Environment integrated water solutions [cited on 2018 Sep 4]. Available from: http://spel.com.au/treatment/stormwater-treatment/

39. Options for treating stormwater [Internet]. Melbourne Water [cited on 2018 Sep 4]. Available from: https://www.melbournewater.com.au/planning-and-building/stormwater-management/options-treating-stormwater

40. The National Academies. Urban stormwater management in the United States [Internet]. Washington, USA: The National Academies Press; 2009 [cited on 2018 Sep 4]. Available from: https://ebookcentral.proquest.com/lib/metropolia-ebooks/reader.action?docID=3378817&query

41. Erikson Andrew J., Weiss Peter T., Gulliver John S.. Optimizing Stormwater Treatment Practices [Internet]. New York: Springer Science+Business Media; 2013 [cited on 2018 Sep 4]. Available from: https://link.springer.com/content/pdf/10.1007%2F978-1-4614-4624-8.pdf

42. Clements W., Kiffney P. Ecological effects of metals on benthic invertebrates Florida, USA: CRC Press, Boca Raton. In: Simon TP (ed) Biological response signatures, pp 135–154; 2002 [cited on 2018 Sep 4].

43. Novotny EF and Stefan HG. Projections of chloride concentrations in urban lakes receiving road de-icing salt. Water Air and Soil Pollution 211(1–4):261–271; 2010.

44. Sullivan K., Martin D. J., Cardwell R. D., Toll J. E., Duke S. . An analysis of the effects of temperature on salmonids of the Pacific Northwest with implications for selecting temperature criteria [Internet]. Oregon, USA: Sustainable Ecosystems Institute; 2000 [cited on 2018 Sep 4]. Available from: http://www.sei.org/downloads/reports/ salmon2000.pdf

45. Managing Urban Stormwater: Treatment Techniques [Internet]. Sydney, Australia: Environment Protection Authority; 1997 [cited on 2018 Sep 10]. Available from: https://www.environment.nsw.gov.au/resources/stormwater/usp/treattech.pdf

46. YouTube. “Stormwater Treatment: How The CDS Stormwater Treatment System Works.” Online video clip. YouTube, 4 Apr 2017. Web. 10 Sep 2018.

47. Hydrodynamic separator [Internet]. Storm water solution. OH, USA [cited on 2018 Sep 22]. Available from: https://www.estormwater.com/hydrodynamic-separator

48. UNEP D TIE IET. Environmentally Sound Technologies in wastewater treatment for the implementation of the Unep Global Programme Of Action (Gpa) "Guidance On Municipal Wastewater" [Internet]. United Nations Environment Programme: Division of Technology, Industry and Economies; 2000 [cited on 2018 Sep 12]. Available from: http://www.unep.or.jp/ietc/publications/freshwater/sb_summary/index.asp

49. Weiss PT, Erickson AJ, Gulliver JS. Cost and pollutants removal of storm-water treatment practices [Internet]. J Water Resour Plann Manag 133(3):218–229; 2007. [cited on 2018 Sep 18].

50. Ben R. Urbonas, P.E. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach [Internet]. Colorado, USA: Urban Drainage and Flood Control District. [cited on 2018 Sep 12]. Available from: http://uwtrshd.com/assets/sand-flt-paper.pdf

51. Stormwater Management Guidance Manual [Internet]. Philadelphia Water Department. [cited on 2018 Sep 12]. Available from: https://www.pwdplanreview.org/manual/chapter-4/4.9-media-filters

52. Mudgway LB, Duncan HP, McMahon TA and Chiew FHS. Best Practice Environmental Management Guidelines for Urban Stormwater: Background Paper. Melbourne, Australia: Draft, Cooperative Research Centre for Catchment Hydrology; 1997.

53. Construction Industry Research and Information Association (CIRIA). London: Sustainable Drainage Systems Training Materials, CIRIA; 2000. [cited on 2018 Sep 17].

54. Erika Nilsson, Andrea Stigsson. Pollutants Removal Efficiencies and Flow Detention of Infiltration Trenches [Internet]. Sweden: Master of Science Thesis in the Master's Programme Geo and Water Engineering, Chalmers University of Technology.

55. Policy 11: Land Development Guidelines, Section 13 Water Sensitive Urban Design (WSUD) Guidelines, 13.11 Porous and Permeable Paving [Internet]. Gold Coast Planning Scheme; 2003. [cited on 2018 Sep 12]. Available from: http://www.goldcoast.qld.gov.au/gcplanningscheme_0509/attachments/policies/policy11/section_13_11_porous_and_permeable_paving.pdf

56. Hunt WF, Jarrett AR, Smith JT, Sharkey LJ. Evaluating bioretention hydrology and nutrient removal at three field sites in North Carolina. J Irrigat Drain Eng-ASCE 132(6):600–608; 2006. [cited on 2018 Sep 20].

57. Tertiary treatment solutions [Internet]. Ecosol stormwater filtration systems. [cited on 2018 Sep 20]. Available from: http://www.ecosol.com.au/category/tertiary-treatment-solutions/

58. Blecken, G.-T., Marsalek, J., Viklander, M. Laboratory Study of Stormwater Biofiltration in Low Temperatures: Total and Dissolved Metal Removals and Fates. Water. Air. Soil Pollut. 219, 303–317; 2010. doi:10.1007/s11270-010-0708-2. [cited on 2018 Sep 20].

59. Muthanna, T.M., Viklander, M., Thorolfsson, S.T., 2008. Seasonal climatic effects on the hydrology of a rain garden. Hydrol. Process. 22, 1640–1649; 2010. doi:10.1002/hyp.6732. [cited on 2018 Sep 20].

60. Blecken, G.-T., Zinger, Y., Deletić, A., Fletcher, T.D., Hedström, A., Viklander, M. . Laboratory study on stormwater biofiltration: Nutrient and sediment removal in cold temperatures. J. Hydrol. 394, 507–514; 2010a. doi:10.1016/j.jhydrol.2010.10.010. [cited on 2018 Sep 20].

61. Process for selecting Best Management Practices [Internet].. Minnesota Pollution Control Agency. Minnesota Stormwater Manual. [cited on 2018 Oct 2]. Available from:https://stormwater.pca.state.mn.us/index.php/Process_for_selecting_Best_Management_Practices

62. Stormwater Collection & Containment System Subsurface Aerated Biofilter Treatment Facility [Internet]. Edmonton International Airport. Canada: EIA Fact sheet. [cited on 2018 Sep 20]. Available from: http://corporate.flyeia.com/sites/default/files/files/sccs-sabtf_stormwater_factsheet_may3_2018.pdf

63. Environmental Sustainability [Internet]. Edmonton International Airport. Canada: EIA Fact sheet. [cited on 2018 Sep 20]. Available from: http://corporate.flyeia.com/about-us/sustainability/environmental-sustainability

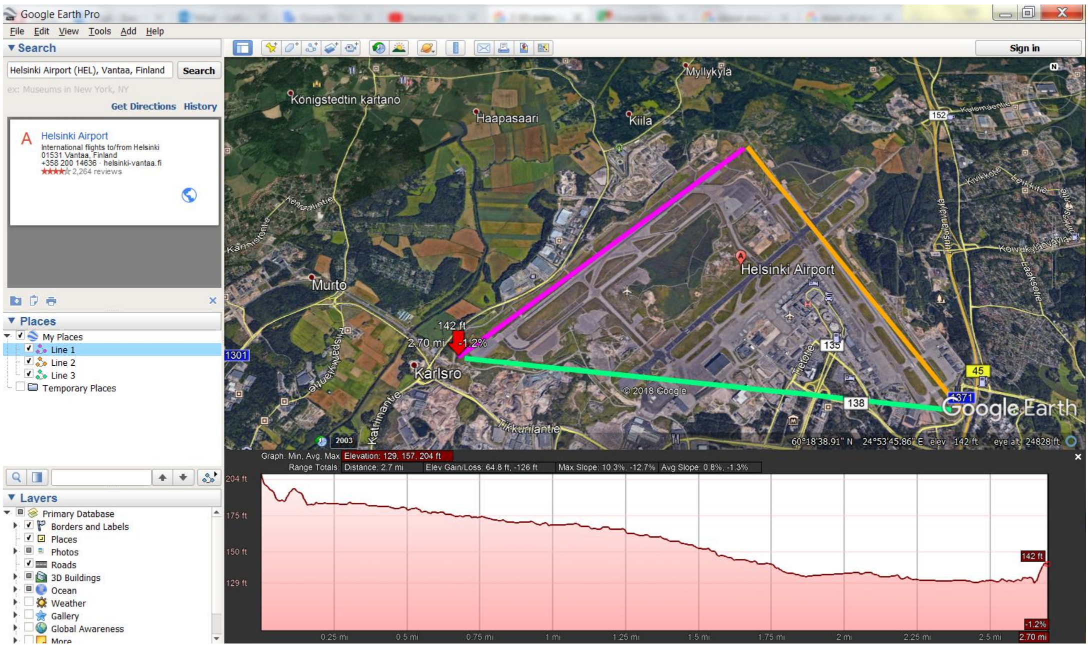
64. Buffalo-Niagara International airport, NY Deicing Fluid Treatment [Internet]. Nexom. [cited on 2018 Sep 20]. Available from: https://nexom.com/buffalo/

65. SAGR Full nitrification at <1°C [Internet]. Nexom. [cited on 2018 Sep 20]. Available from: https://nexom.com/sagr

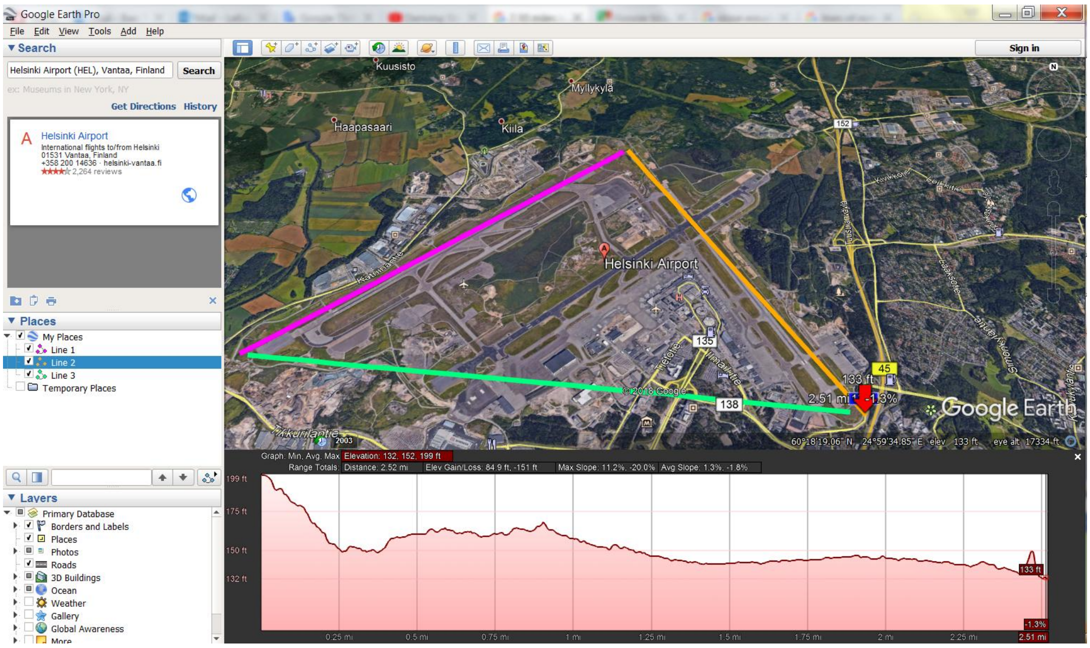
66. City of Vantaa, Centre for Environmental Affairs. State of the Environment in Vantaa [Internet]. Vantaa; 2012 [cited on 2018 Sep 27]. Available from: https://www.vantaa.fi/instancedata/prime_product_julkaisu/vantaa/embeds/vantaawwwstructure/118889_state_of_the_Encironment_in_Vantaa.pdf

Appendix 1. Elevation profile of Helsinki-Vantaa International Airport

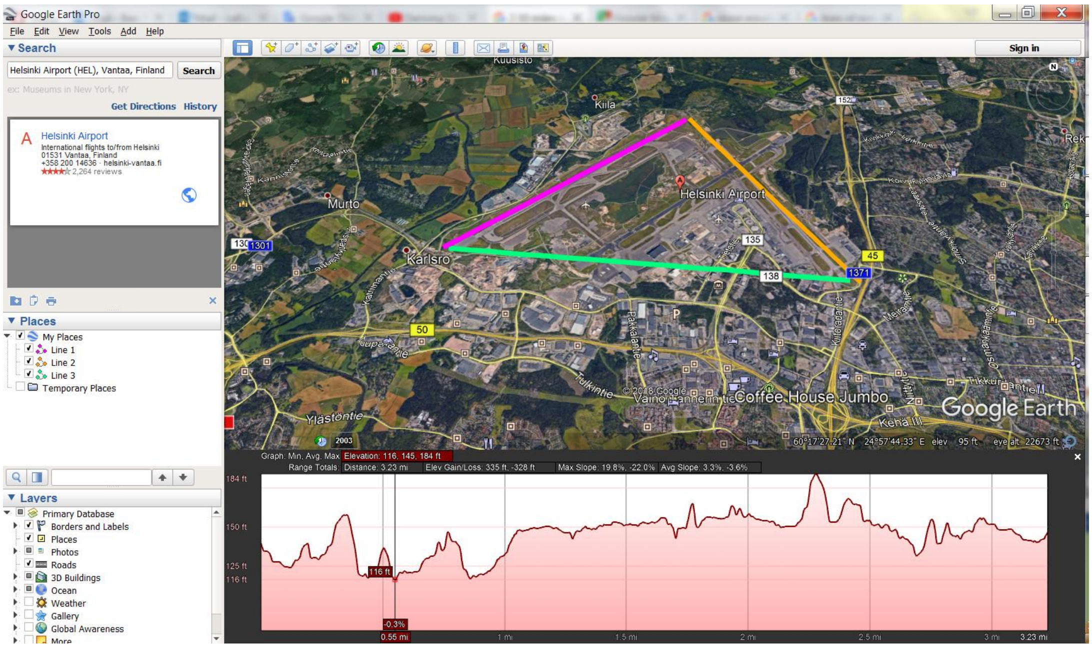
1. Line 1 (pink)



2. Line 2 (orange)



3. Line 3 (green)



Appendix 2. Precipitation observations in Helsinki-Vantaa International Airport

1. Metadata

Observation station	Vantaa Helsinki-Vantaan lentoasema
Station ID	100968
Latitude (decimals)	60.32670
Longitude (decimals)	24.95675
Time from	2010-01-01T00:00:00.000Z
Time to	2018-09-25T23:59:59.000Z
Data creation time	2018-09-26T10:32:14.246Z

2. Parameter data

Parameter	Unit
Precipitation amount	mm
Snow depth	cm

3. Observation data

Year	m	d	Time	Time zone	Precipitation amount (mm)	Snow depth (cm)
2010	1	1	00:00	UTC	0.1	41
2010	1	2	00:00	UTC	0.1	40
2010	1	3	00:00	UTC	1.1	38
2010	1	4	00:00	UTC	2.9	40
2010	1	5	00:00	UTC	0.6	44
2010	1	6	00:00	UTC	0.9	45
2010	1	7	00:00	UTC	3.3	46
2010	1	8	00:00	UTC	0	43
2010	1	9	00:00	UTC	0.1	41
2010	1	10	00:00	UTC	0.2	40
2010	1	11	00:00	UTC	0.1	39
2010	1	12	00:00	UTC	0.2	39
2010	1	13	00:00	UTC	0.1	38
2010	1	14	00:00	UTC	0.2	38
2010	1	15	00:00	UTC	0.1	38
2010	1	16	00:00	UTC	0.1	38

2010	1	17	00:00	UTC	0.2	38
2010	1	18	00:00	UTC	0.1	38
2010	1	19	00:00	UTC	0	38
2010	1	20	00:00	UTC	-1	38
2010	1	21	00:00	UTC	0.2	38
2010	1	22	00:00	UTC	0.1	38
2010	1	23	00:00	UTC	0.5	40
2010	1	24	00:00	UTC	0.4	40
2010	1	25	00:00	UTC	0.1	40
2010	1	26	00:00	UTC	0.1	41
2010	1	27	00:00	UTC	0.1	41
2010	1	28	00:00	UTC	1.3	41
2010	1	29	00:00	UTC	1.8	44
2010	1	30	00:00	UTC	4.5	49
2010	1	31	00:00	UTC	2.2	57
2010	2	1	00:00	UTC	11.1	57
2010	2	2	00:00	UTC	0.8	59
2010	2	3	00:00	UTC	0	60
2010	2	4	00:00	UTC	0.4	58
2010	2	5	00:00	UTC	0.1	58
2010	2	6	00:00	UTC	0.2	58
2010	2	7	00:00	UTC	5.4	57
2010	2	8	00:00	UTC	2.1	60
2010	2	9	00:00	UTC	1.1	61
2010	2	10	00:00	UTC	0.1	62
2010	2	11	00:00	UTC	0.2	62
2010	2	12	00:00	UTC	0.4	60
2010	2	13	00:00	UTC	0	59
2010	2	14	00:00	UTC	0	59
2010	2	15	00:00	UTC	0.1	58
2010	2	16	00:00	UTC	0.2	57
2010	2	17	00:00	UTC	0.9	57
2010	2	18	00:00	UTC	0.2	58
2010	2	19	00:00	UTC	2.2	58
2010	2	20	00:00	UTC	6.1	58
2010	2	21	00:00	UTC	1.4	53
2010	2	22	00:00	UTC	1	53
2010	2	23	00:00	UTC	9.2	56
2010	2	24	00:00	UTC	0.1	68
2010	2	25	00:00	UTC	-1	68
2010	2	26	00:00	UTC	1.4	66
2010	2	27	00:00	UTC	1	64
2010	2	28	00:00	UTC	3.4	61

2010	3	1	00:00	UTC	4.7	59
2010	3	2	00:00	UTC	0.6	61
2010	3	3	00:00	UTC	1.2	60
2010	3	4	00:00	UTC	0.7	60
2010	3	5	00:00	UTC	-1	60
2010	3	6	00:00	UTC	0.1	60
2010	3	7	00:00	UTC	0	60
2010	3	8	00:00	UTC	0.1	59
2010	3	9	00:00	UTC	-1	60
2010	3	10	00:00	UTC	0	60
2010	3	11	00:00	UTC	3.9	59
2010	3	12	00:00	UTC	0.4	62
2010	3	13	00:00	UTC	0.1	61
2010	3	14	00:00	UTC	0.6	60
2010	3	15	00:00	UTC	0	61
2010	3	16	00:00	UTC	0.2	61
2010	3	17	00:00	UTC	0.1	60
2010	3	18	00:00	UTC	8.1	62
2010	3	19	00:00	UTC	2.7	71
2010	3	20	00:00	UTC	0.3	63
2010	3	21	00:00	UTC	7	60
2010	3	22	00:00	UTC	-1	63
2010	3	23	00:00	UTC	-1	63
2010	3	24	00:00	UTC	-1	62
2010	3	25	00:00	UTC	-1	62
2010	3	26	00:00	UTC	1.3	61
2010	3	27	00:00	UTC	10.8	58
2010	3	28	00:00	UTC	2.4	50
2010	3	29	00:00	UTC	3.3	46
2010	3	30	00:00	UTC	0.8	44
2010	3	31	00:00	UTC	1.5	41
2010	4	1	00:00	UTC	0	37
2010	4	2	00:00	UTC	4.7	30
2010	4	3	00:00	UTC	9.1	28
2010	4	4	00:00	UTC	0.4	22
2010	4	5	00:00	UTC	0.5	20
2010	4	6	00:00	UTC	3	17
2010	4	7	00:00	UTC	0.1	15
2010	4	8	00:00	UTC	0	9
2010	4	9	00:00	UTC	-1	5
2010	4	10	00:00	UTC	-1	3
2010	4	11	00:00	UTC	-1	1
2010	4	12	00:00	UTC	-1	0

2010	4	13	00:00	UTC	-1	0
2010	4	14	00:00	UTC	-1	0
2010	4	15	00:00	UTC	0.9	0
2010	4	16	00:00	UTC	7.4	0
2010	4	17	00:00	UTC	11.6	0
2010	4	18	00:00	UTC	-1	0
2010	4	19	00:00	UTC	0	0
2010	4	20	00:00	UTC	0	0
2010	4	21	00:00	UTC	0.5	0
2010	4	22	00:00	UTC	6.9	0
2010	4	23	00:00	UTC	2	0
2010	4	24	00:00	UTC	0	0
2010	4	25	00:00	UTC	0	0
2010	4	26	00:00	UTC	-1	-1
2010	4	27	00:00	UTC	0	-1
2010	4	28	00:00	UTC	3.4	-1
2010	4	29	00:00	UTC	0.8	-1
2010	4	30	00:00	UTC	0.6	-1
2010	5	1	00:00	UTC	1.8	-1
2010	5	2	00:00	UTC	-1	-1
2010	5	3	00:00	UTC	1.9	-1
2010	5	4	00:00	UTC	7.1	-1
2010	5	5	00:00	UTC	0.1	-1
2010	5	6	00:00	UTC	-1	-1
2010	5	7	00:00	UTC	20.7	-1
2010	5	8	00:00	UTC	0.1	-1
2010	5	9	00:00	UTC	0.1	-1
2010	5	10	00:00	UTC	0	-1
2010	5	11	00:00	UTC	-1	-1
2010	5	12	00:00	UTC	0.3	-1
2010	5	13	00:00	UTC	0.2	-1
2010	5	14	00:00	UTC	-1	-1
2010	5	15	00:00	UTC	0.9	-1
2010	5	16	00:00	UTC	4	-1
2010	5	17	00:00	UTC	0	-1
2010	5	18	00:00	UTC	0.1	-1
2010	5	19	00:00	UTC	-1	-1
2010	5	20	00:00	UTC	-1	-1
2010	5	21	00:00	UTC	-1	-1
2010	5	22	00:00	UTC	24.6	-1
2010	5	23	00:00	UTC	7.4	-1
2010	5	24	00:00	UTC	5	-1
2010	5	25	00:00	UTC	-1	-1

2010	5	26	00:00	UTC	3.9	-1
2010	5	27	00:00	UTC	0.5	-1
2010	5	28	00:00	UTC	0.9	-1
2010	5	29	00:00	UTC	1.7	-1
2010	5	30	00:00	UTC	0.1	-1
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2010	6	1	00:00	UTC	-1	-1
2010	6	2	00:00	UTC	-1	-1
2010	6	3	00:00	UTC	-1	-1
2010	6	4	00:00	UTC	-1	-1
2010	6	5	00:00	UTC	-1	-1
2010	6	6	00:00	UTC	-1	-1
2010	6	7	00:00	UTC	-1	-1
2010	6	8	00:00	UTC	-1	-1
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2010	6	13	00:00	UTC	0.9	-1
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2010	6	17	00:00	UTC	0.1	-1
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2010	6	25	00:00	UTC	5.7	
2010	6	26	00:00	UTC	0.1	
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2010	6	28	00:00	UTC	-1	
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2010	6	30	00:00	UTC	-1	
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2010	7	14	00:00	UTC	-1	
2010	7	15	00:00	UTC	5	
2010	7	16	00:00	UTC	-1	
2010	7	17	00:00	UTC	0.1	
2010	7	18	00:00	UTC	2.9	
2010	7	19	00:00	UTC	-1	
2010	7	20	00:00	UTC	-1	
2010	7	21	00:00	UTC	-1	
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2010	7	23	00:00	UTC	0.9	
2010	7	24	00:00	UTC	0.3	
2010	7	25	00:00	UTC	0.1	
2010	7	26	00:00	UTC	0.2	
2010	7	27	00:00	UTC	0.1	
2010	7	28	00:00	UTC	0.1	
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