AIRPORTS COUNCIL INTERNATIONAL

The voice of the world's airports

Airport Environmental Management – An Overview

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Mexico City, Mexico

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GAP

Airport Environmental Management

1. Noise
2. Local Air Quality
3. Greenhouse Gas Emissions
4. Water
5. Solid Waste
6. Other Issues

1 Noise - Overview

Aircraft Noise Management

- Reducing actual noise levels using aircraft modernization and flight track management

Land Use Planning

- Reducing the number of people subject to high noise levels

Community and Communications

- Improving community understanding, attitudes and acceptance of airport activity

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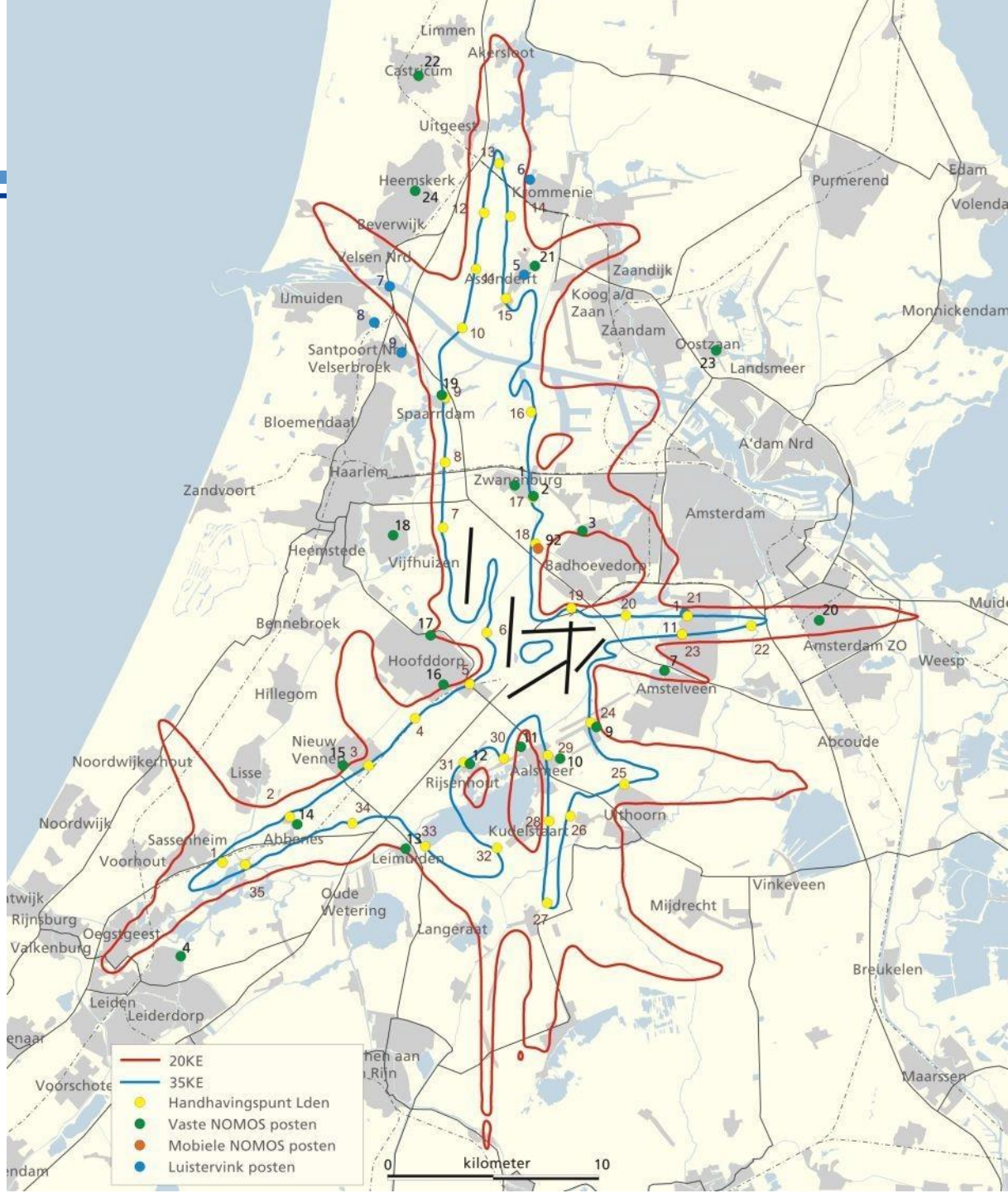
1 Noise

Managing noise

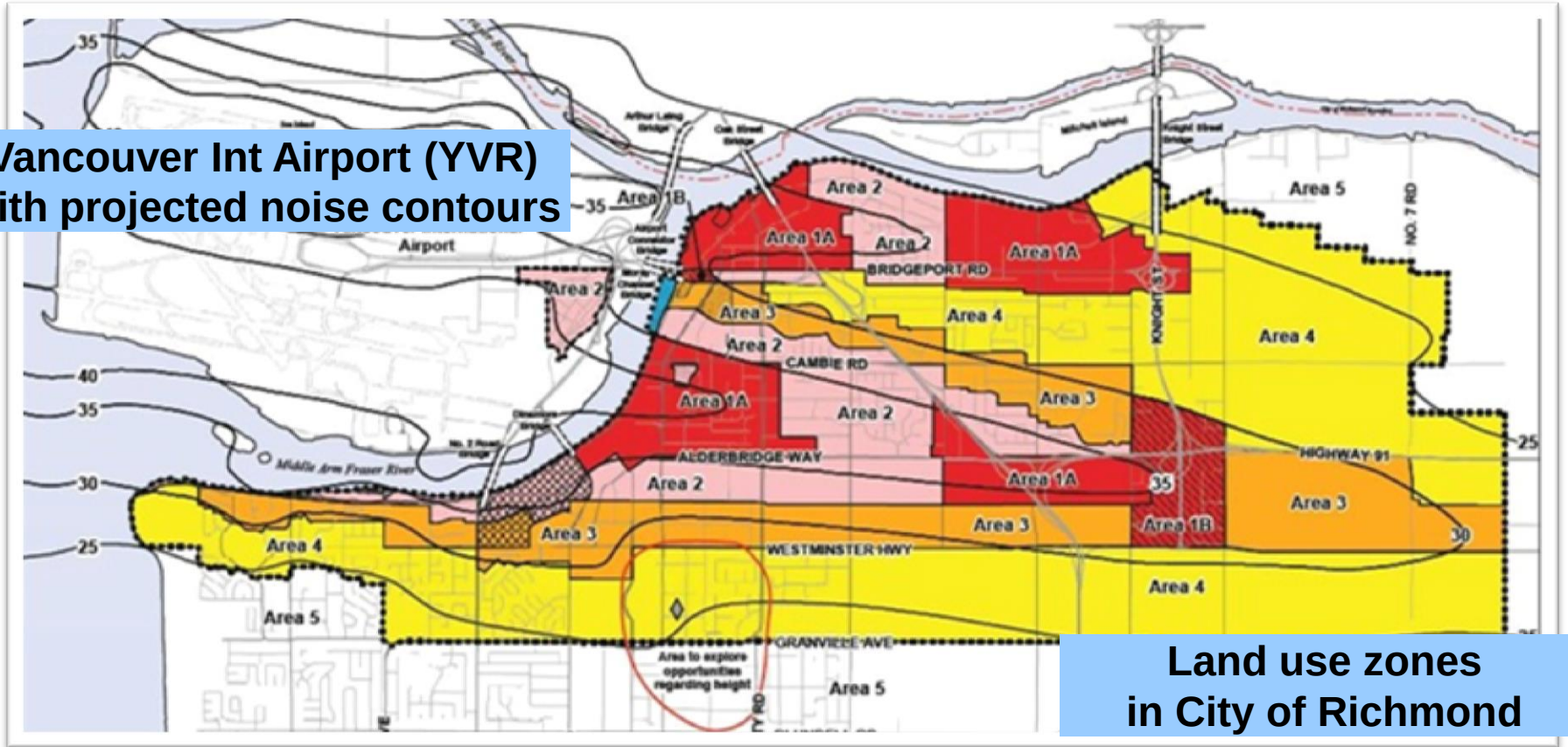
- Runway use
- Tracks to avoid urban areas
- Modern aircraft fleet

(Schiphol AMS)



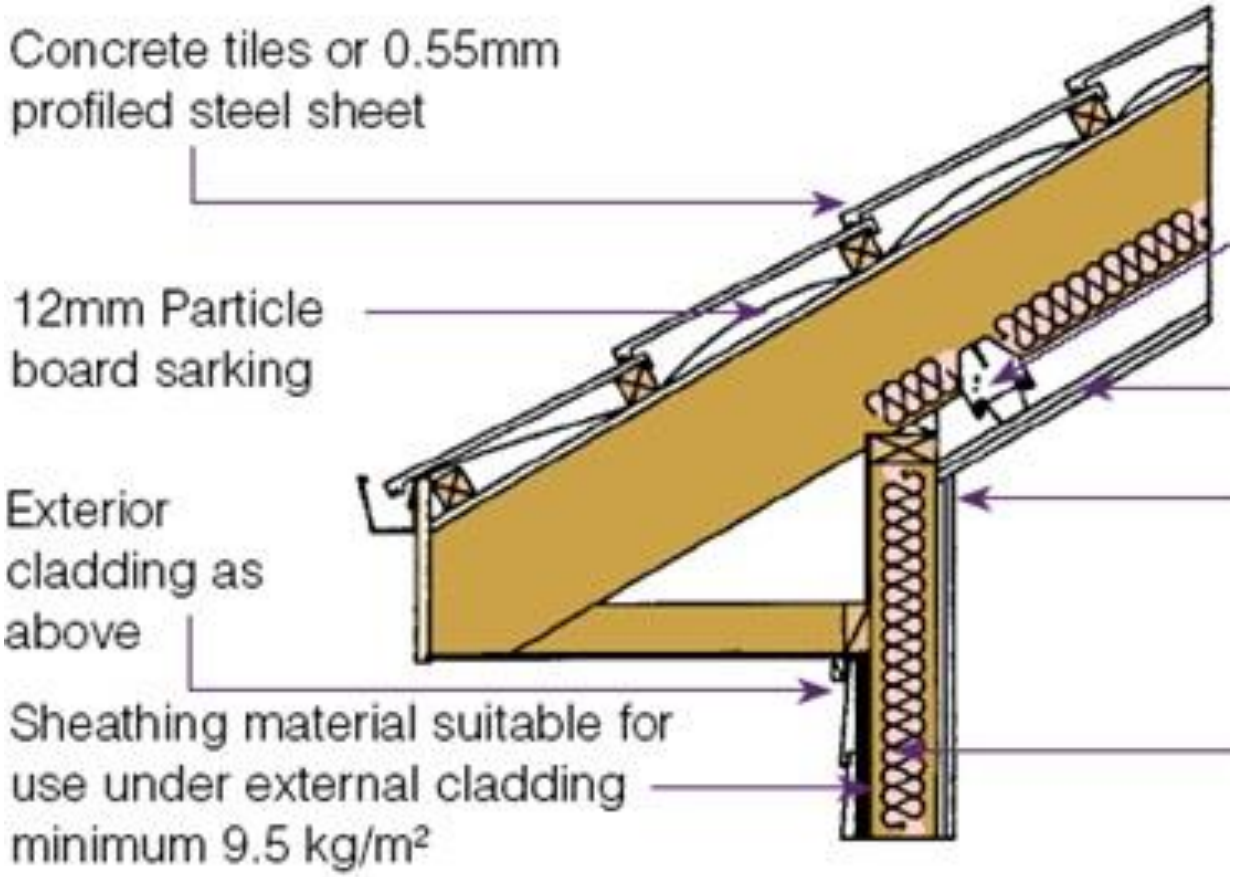
1 Noise - Land Use Planning

- Local government authorities zone the land.
- Need to avoid residences, schools and hospitals in noise affected areas.



1 Noise - Land Use Planning

Sound insulation and ventilation of existing and new housing (only a partial solution)



1 Noise - Community and Communications

- Informing and interacting with communities
- Airport website
- Managing complaints and noise forums
- Focus on Sustainability elements – Impacts and Benefits on Environment, Society and Economics
- Noise-tracking web sites
- Clear, transparent and up to date information

1 Noise Tracking Websites

WebTrak

PRINT

Airports are increasingly realizing that community engagement is more and more important to the operations of the airport. The growing challenge is how to manage this continuous engagement to realize the best results for both the general public and the airport.

Lochard has launched the first in a series of low-risk subscription services aimed at improving and maintaining valuable dialogue with the airport's external stakeholders. This takes the pressure off your operations team and eases the pressure for your management team.

WebTrak provides live aircraft movements. It gives the community access to flight and noise data and reduces the need and time for airport employees to explain where aircraft actually fly, how often, who they are and where they go.

Read more...

Visit WebTrak Sites

Heathrow

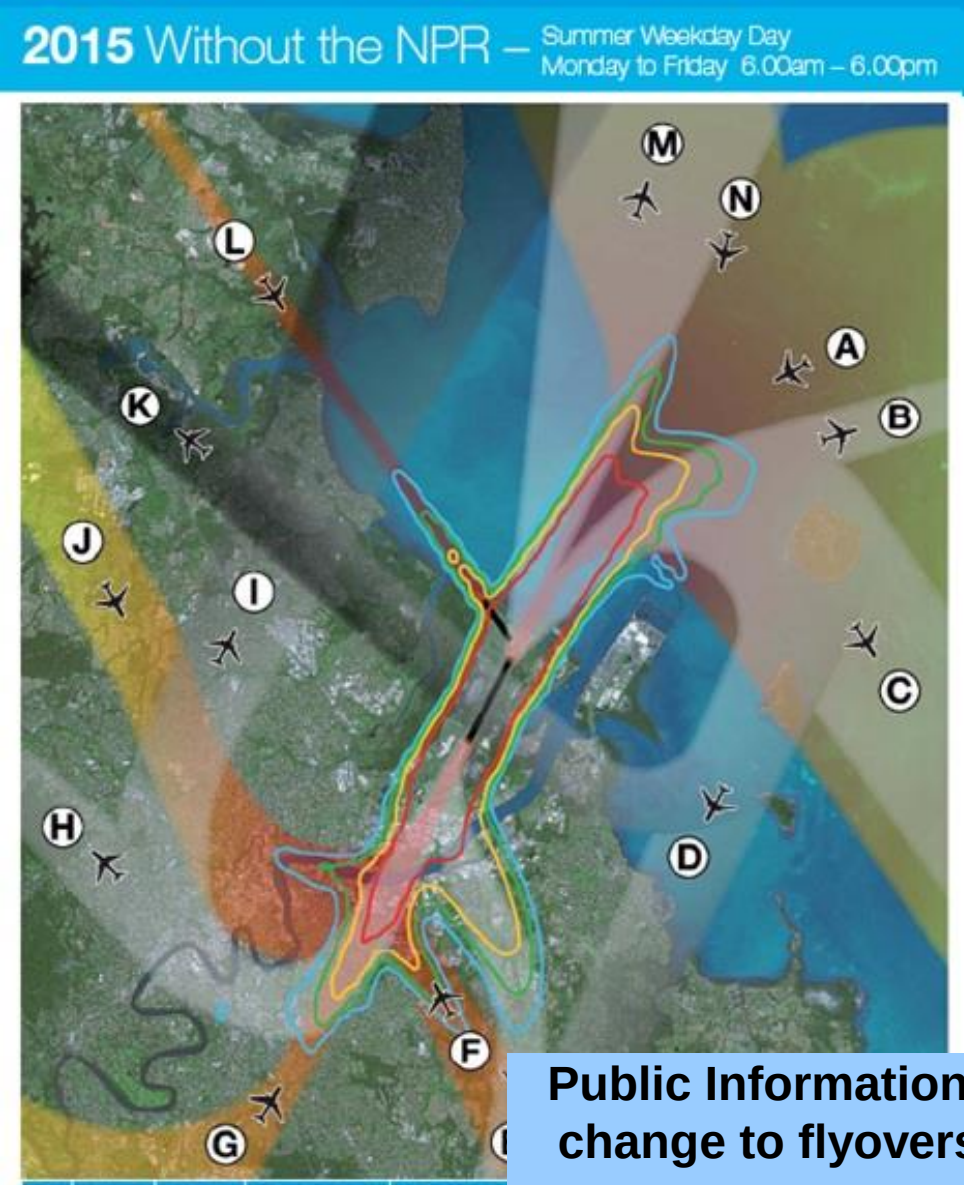
Gatwick

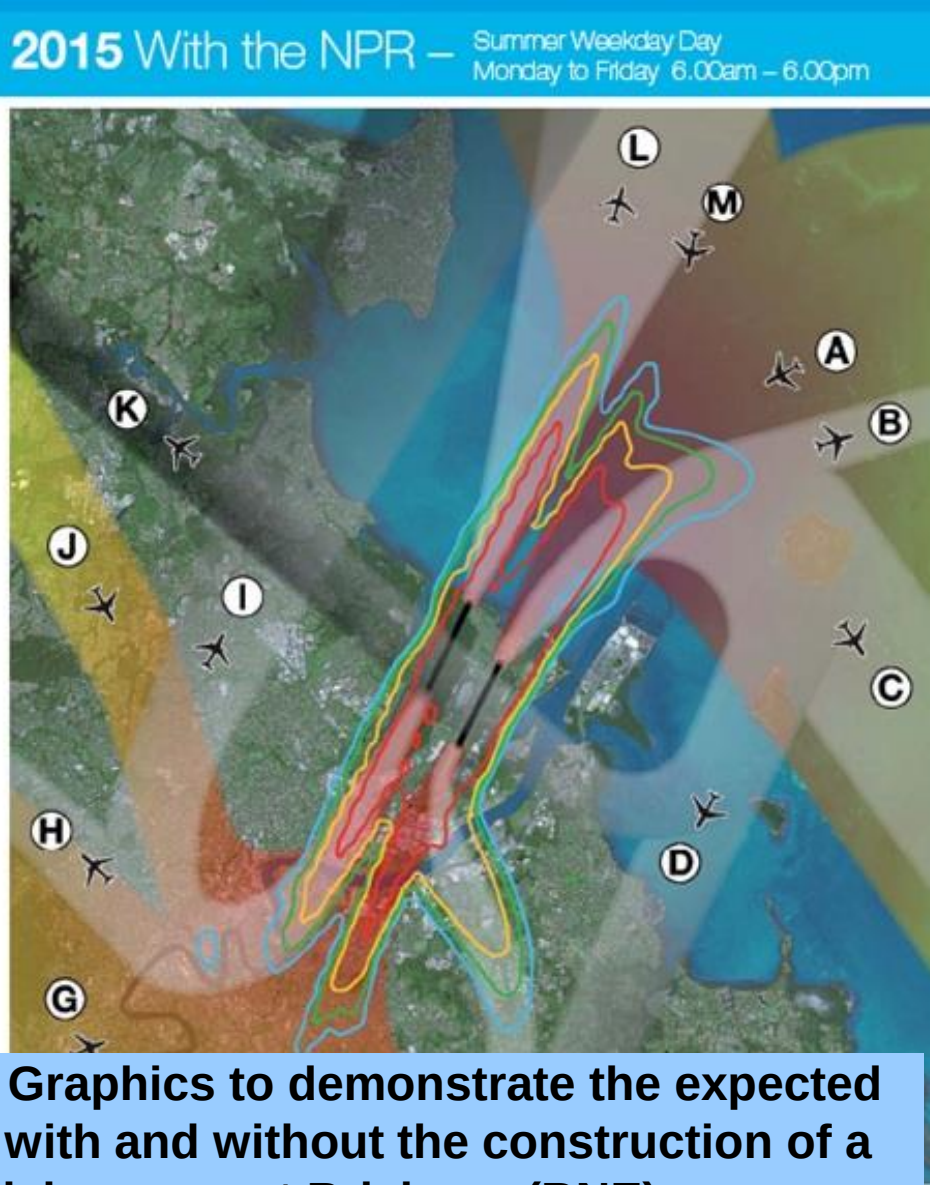
Seattle

Sacramento

San Jose

Stansted





Public Information: Graphics to demonstrate the expected change to flyovers with and without the construction of a new parallel runway at Brisbane (BNE)

Flight path	Flight path type	Average number of jet flights on flight path	Expected minimum and maximum numbers of jet flights on path	Percentage of Brisbane Airport's total jet flights on path	
A	Arrival	60	0 - 133	16%	27%
B	Departure	1	0 - 2	<1%	25%
C	Departure	7	0 - 13	2%	25%
D	Departure	59	0 - 110	16%	25%
E	Departure	66	0 - 122	16%	27%
F	Arrival	45	0 - 108	12%	30%
G	Arrival	28	0 - 177	8%	25%
H	Departure	9	0 - 19	2%	27%
I	Departure	21	0 - 47	6%	27%
J	Arrival	23	0 - 53	6%	25%
K	Departure	3	0 - 6	1%	25%
L	Arrival	1	0 - 2	<1%	28%

Arrivals Mean Altitude 4,500 ft 0 ft

Departures Mean Altitude 12,000 ft

The number of overflights of 70dB(A) and above during the indicated time period

5 to 9 overflights
10 to 19 overflights
20 to 49 overflights
50 or more overflights

A	Arrival	57	0 - 135	15%	22%
B	Departure	11	0 - 22	3%	7%
C	Departure	7	0 - 13	2%	9%
D	Departure	64	0 - 110	17%	7%
E	Departure	53	0 - 125	14%	22%
F	Arrival	62	0 - 126	17%	23%
G	Arrival	7	0 - 69	2%	23%
H	Departure	7	0 - 17	2%	23%
I	Departure	18	0 - 46	5%	23%
J	Arrival	22	0 - 53	6%	27%
K	Departure	5	0 - 10	1%	8%

Arrivals Mean Altitude 4,500 ft 0 ft

Departures Mean Altitude 12,000 ft

The number of overflights of 70dB(A) and above during the indicated time period

5 to 9 overflights
10 to 19 overflights
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50 or more overflights

2 Local Air Quality (LAQ) - Overview

Regulations/Guidance

- Permitted air quality pollutant levels

Inventory

- Identify sources and quantities of emissions

LAQ Assessment

- Monitoring pollutant concentrations
- Modelling dispersion – source to receptor

Mitigation of Sources

- Actions to reduce emissions

2 LAQ – Regional Regulation

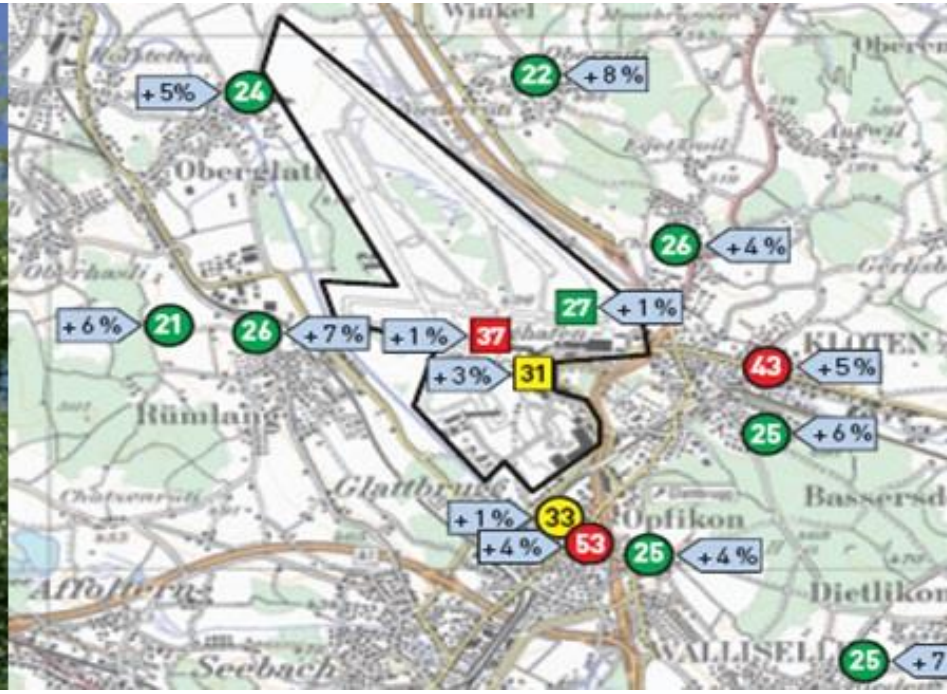
Example limits on local pollutant concentrations – µg/m3

	SO_2		NO_2		CO		PM10	
	1 hr	1 yr	1 hr	1yr	1 hr	8 hr	1 d	1 yr
WHO	125	-	200	40	30	10	-	-
EU	350	20	200	40	-	10	50	40
Australia	520	50	220	50	-	10	50	-
Brazil	-	90	320	100	40	10	150	-
Canada	900	60	400	100	35	15	-	-

2 LAQ – Assessment - Measurement for Compliance

Monitoring (measuring) pollutant concentrations

- Compliance with regulated limits

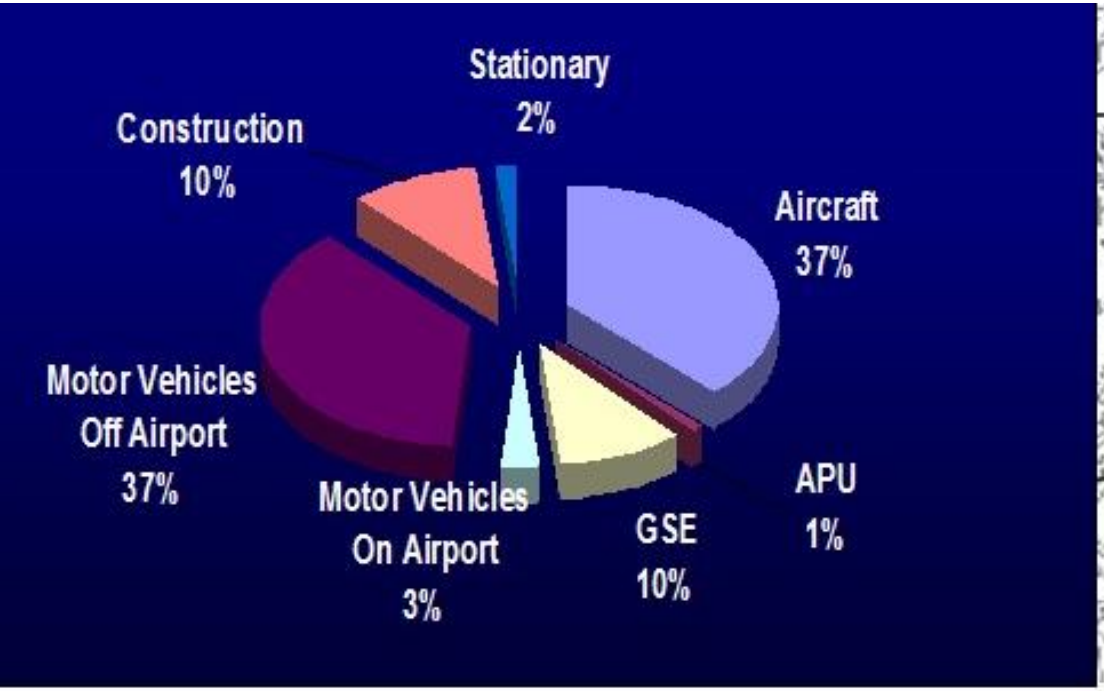


Red = points of non-compliance

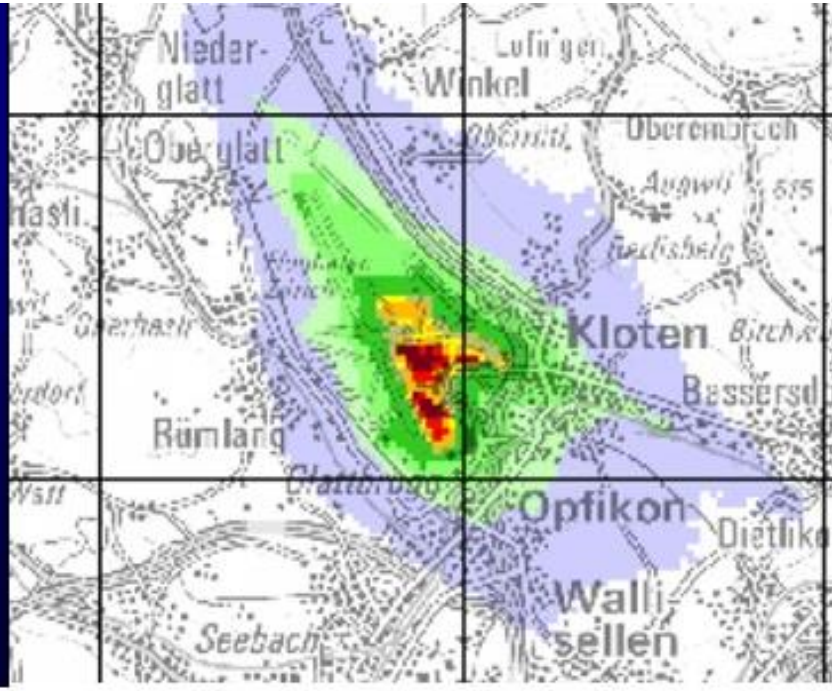
2 LAQ – Modelling and Source Apportionment

Modelling (calculating) pollutant concentrations

- Inventory of emissions sources
- Calculating physical and chemical dispersion
- Source apportionment



Inventory of NOx Emissions



Calculated NOx Concentrations (ZRH)

2 LAQ Mitigation – Reducing Emissions

Providing fixed electrical power (400Hz) and pre-conditioned air to aircraft at terminal gates replaces APU usage and allows engine switch-off.

2 LAQ Mitigation – Reducing Emissions

Automated metro line between terminals and train station replaces shuttle buses for 140 000 PAX per day.

Reduction of 2500 t CO2 and 15 t NOx per year.

(Paris CDG)

2 LAQ Mitigation – Reducing Emissions

Ground vehicle fleet replacement – CNG, SULEV, Hybrid and Electric vehicles.

Rapid recharge station for Electric Vehicles

(DFW Dallas Fort Worth)

3 Greenhouse Gas Emissions Management

ACI Guidance Manual

ACERT Inventory Tool

Airport Carbon Accreditation

- **Certification of achievements**

More detail will be provided in the ICAO State Action Plan Workshop tomorrow.

3 GHG Guidance Manual

- Emissions Categories – Scopes 1, 2, and 3
- Inventory
- Goal Setting
- Reducing emissions
- Carbon Neutrality
- Reporting and Certification

Also ES and FR

www.aci.aero

3 GHG Inventory

ACERT
AIRPORT CARBON AND EMISSIONS REPORTING TOOL

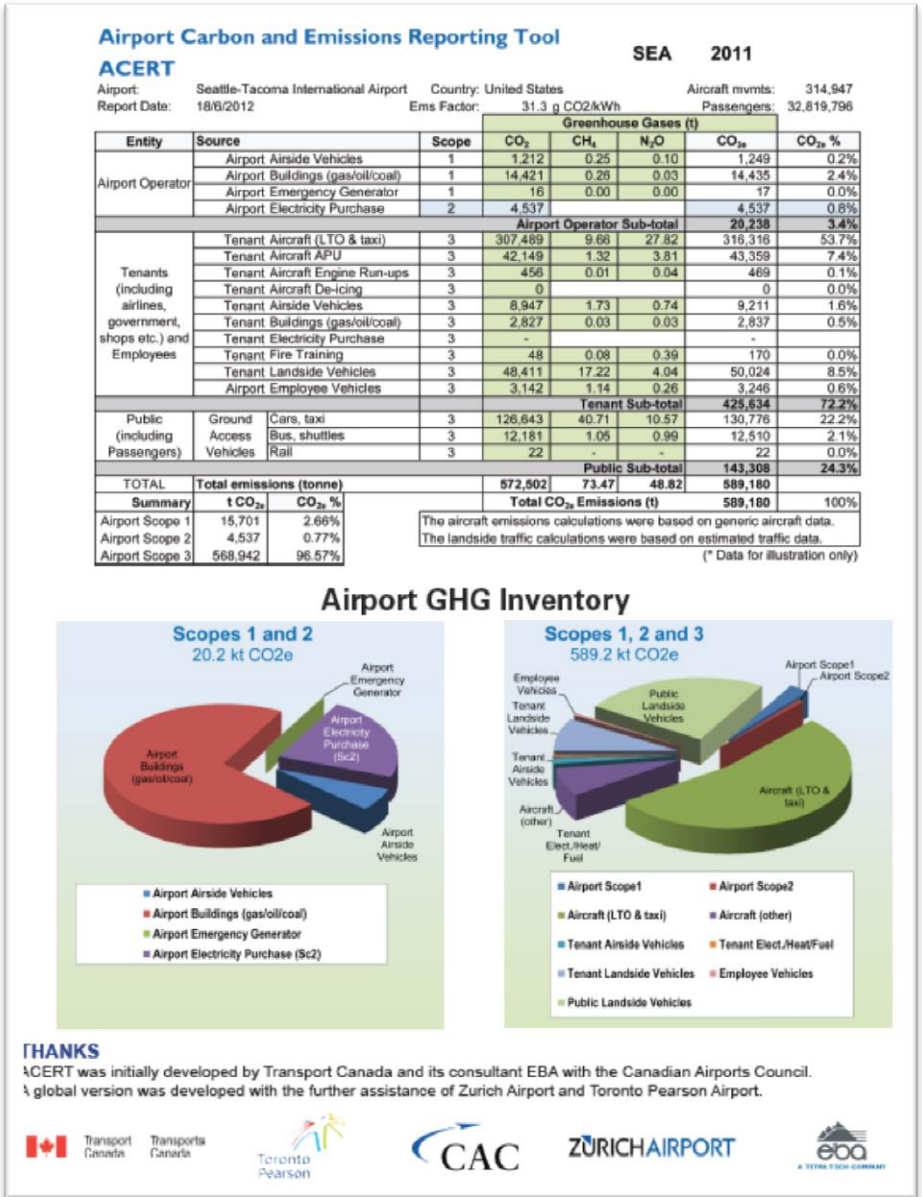
ACERT v2.0

Do-It-Yourself Airport Emissions Inventory Tool

Developed by ACI and Transport Canada

Free, no expertise required

Email: acert@aci.aero



Airport Carbon and Emissions Reporting Tool

ACERT SEA 2011

Airport: Seattle-Tacoma International Airport Country: United States Aircraft mvmts: 314,947
Report Date: 18/6/2012 Ems Factor: 31.3 g CO2/kWh Passengers: 32,819,796

Entity	Source		Scope	CO_2	CH_4	N_2O	CO_{2e}	CO_{2e} %
				Greenhouse Gases (t)				
Airport Operator	Airport Airside Vehicles		1	1,212	0.25	0.10	1,249	0.2%
	Airport Buildings (gas/oil/coal)		1	14,421	0.26	0.03	14,435	2.4%
	Airport Emergency Generator		1	16	0.00	0.00	17	0.0%
	Airport Electricity Purchase		2	4,537			4,537	0.8%
						Airport Operator Sub-total	20,238	3.4%
Tenants (including airlines, government, shops etc.) and Employees	Tenant Aircraft (LTO & taxi)		3	307,489	9.66	27.82	316,316	53.7%
	Tenant Aircraft APU		3	42,149	1.32	3.81	43,359	7.4%
	Tenant Aircraft Engine Run-ups		3	456	0.01	0.04	469	0.1%
	Tenant Aircraft De-icing		3	0			0	0.0%
	Tenant Airside Vehicles		3	8,947	1.73	0.74	9,211	1.6%
	Tenant Buildings (gas/oil/coal)		3	2,827	0.03	0.03	2,837	0.5%
	Tenant Electricity Purchase		3	-			-	
	Tenant Fire Training		3	48	0.08	0.39	170	0.0%
	Tenant Landside Vehicles		3	48,411	17.22	4.04	50,024	8.5%
	Airport Employee Vehicles		3	3,142	1.14	0.26	3,246	0.6%
						Tenant Sub-total	425,634	72.2%
Public (including Passengers)	Ground Access Vehicles	Cars, taxi	3	126,643	40.71	10.57	130,776	22.2%
		Bus, shuttles	3	12,181	1.05	0.99	12,510	2.1%
		Rail	3	22	-	-	22	0.0%
						Public Sub-total	143,308	24.3%
TOTAL	Total emissions (tonne)			572,502	73.47	48.82	589,180	

Summary	t CO_{2e}	CO_{2e} %
Airport Scope 1	15,701	2.66%
Airport Scope 2	4,537	0.77%
Airport Scope 3	568,942	96.57%

Total CO_{2e} Emissions (t) 589,180 100%

The aircraft emissions calculations were based on generic aircraft data.
The landside traffic calculations were based on estimated traffic data.
(* Data for illustration only)

Airport GHG Inventory

THANKS

ACERT was initially developed by Transport Canada and its consultant EBA with the Canadian Airports Council.
A global version was developed with the further assistance of Zurich Airport and Toronto Pearson Airport.

Transport Canada Transports Canada Toronto Pearson CAC ZURICH AIRPORT eba

3 GHG - *Airport Carbon Accreditation*

Carbon management standard designed for the airport industry.

Level 1: Mapping

- **Inventory of airport emissions**

Level 2: Reduction

- **Mitigation of airport-owned emissions**

Level 3: Optimisation

- **Involving stakeholders in emissions reduction**

Level 3+: Neutrality

- **Offsetting residual airport emissions**

www.airportcarbonaccreditation.org

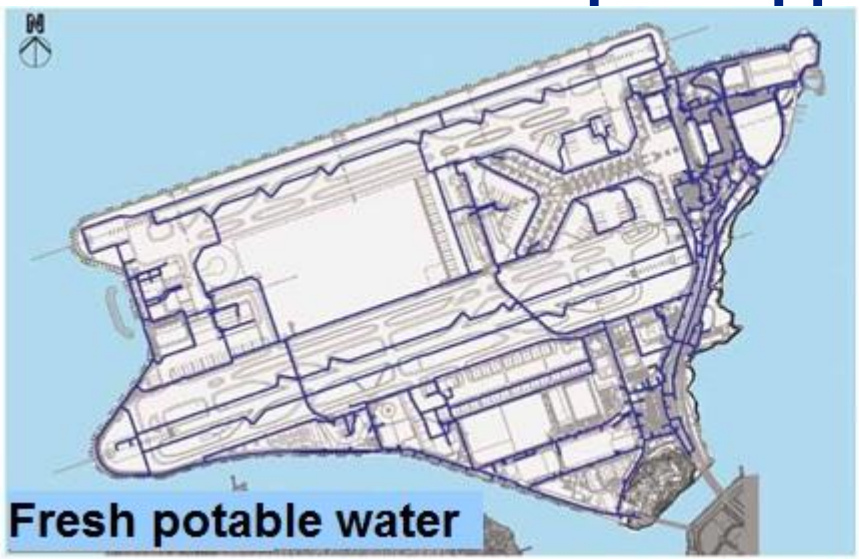
3 *Airport Carbon Accreditation*

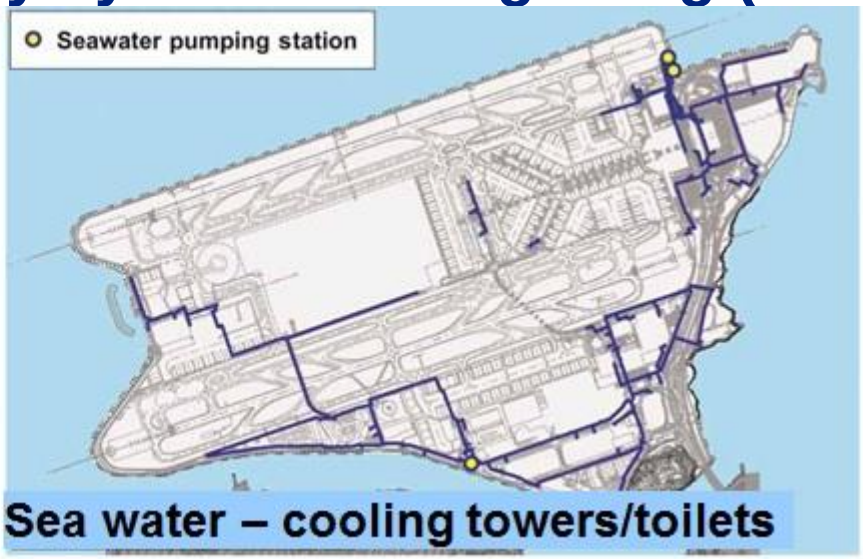
- **Launched by ACI Europe in 2009**
- **Also available in Asia-Pacific and Africa regions**
- **ACERT v2.0 approved for *Airport Carbon Accreditation* Level 1 (Mapping) and Level 2 (Reduction)**
- **Independently administered**

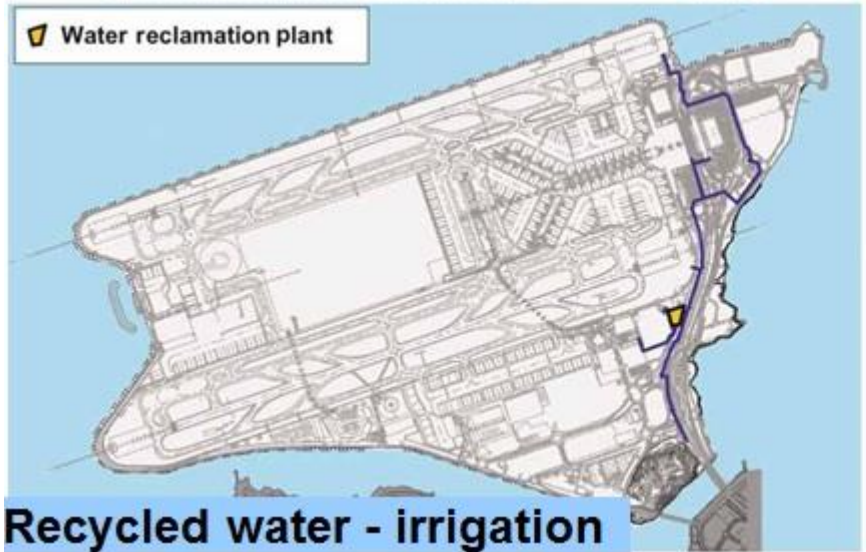
airport carbon accreditation
MAPPING | REDUCTION | OPTIMISATION | NEUTRALITY

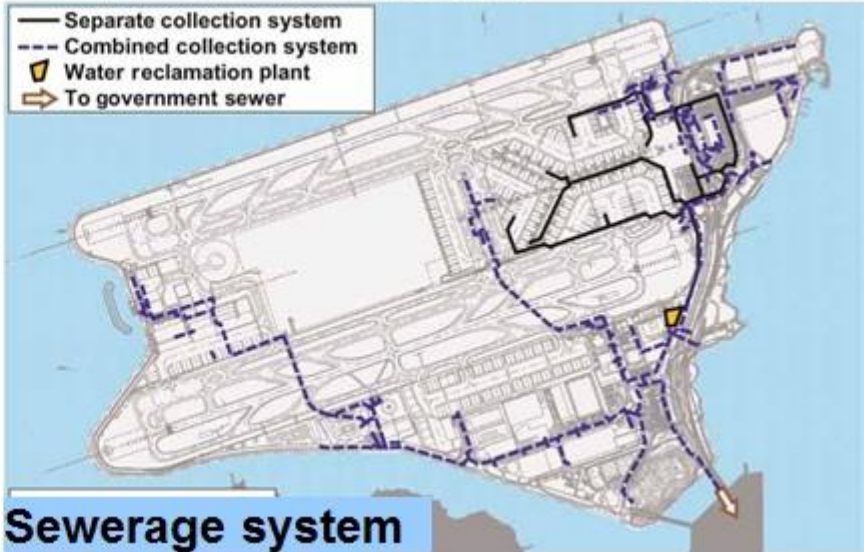
ACERT
AIRPORT CARBON AND EMISSIONS REPORTING TOOL

4 Water - Use - Triple supply system at Hong Kong (HKG)









4 Water – Storm Water Management – SeaTac (SEA)

- Capture
- Storage
- Treatment
- Outflow control

5 Waste Management

Identifying waste streams

- Terminal, deplaned, office, maintenance
- Hazardous materials

Reducing waste production

- Awareness



5 Waste Management

Waste Hierarchy
Reuse Recycling

- Paper, cardboard, aluminium, composting

6 Other Environmental Matters

Planning and Development

- Wildlife and habitat
- Historical and archeological issues

Emergency Planning and Response

- Hazardous Materials
- Spill Management
- Soil and water contamination

Proactive Environmental Initiatives

- Operating and life-cycle costs
- Occupational Health and Safety

Gracias
Thanks

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