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SIMMOD ANALYSIS FOR THE CAPACITY STUDY OF LUQA AIRPORT, MALTA

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SIMMOD was used to perform a capacity study for Luqa Airport, Malta.</td></tr>
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1. INTRODUCTION

1.1 BACKGROUND

The Malta Civil Aviation Department wished to perform a capacity study of Luqa Airport, Malta using the SIMMOD[1] simulation tool available at the Eurocontrol Experimental Centre.

1.2 OBJECTIVES

The objective of the simulation was to perform a capacity study on the current situation at Luqa Airport and then observe the changes in capacity after three different modifications had been implemented. The three modifications were:

- Allowing push-backs at several gates
- An additional taxiway between Park 8 and Park 9
- A full taxiway parallel to runway 32.

2. SIMULATION ENVIRONMENT

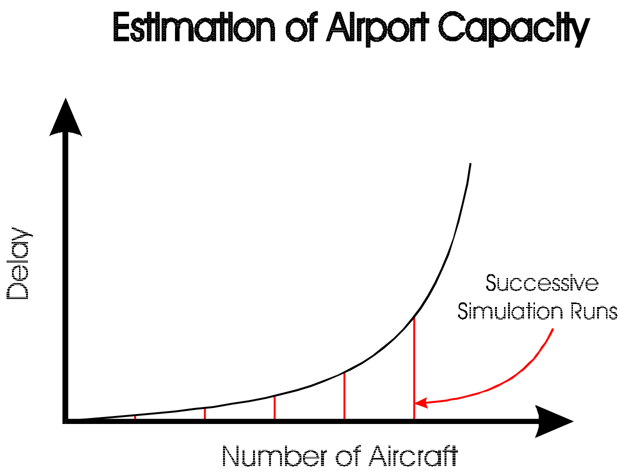
2.1 TRAFFIC SAMPLE

The traffic sample chosen for the simulation was the actual traffic on Friday, 5 May 1995. The traffic was incrementally increased using the SIMMOD duplication feature so that the effect of an increase in future demand could be studied. B747s were added to the future traffic samples in order to reflect the expected increase in heavy aircraft demand at Luqa Airport. The following traffic levels were used:

- 5 May 1995 traffic.
- 5 May 1995 traffic plus 25% increase in traffic excluding military traffic and helicopter flights to Gozo (Heavy traffic added: 1 B747 arrival, 1 B747 departure).
- 5 May 1995 traffic plus 50% increase in traffic excluding military traffic and helicopter flights to Gozo (Heavy traffic added: 1 B747 arrival, 1 B747 departure).
- 5 May 1995 traffic plus 75% increase in traffic excluding military traffic and helicopter flights to Gozo (Heavy traffic added: 2 B747 arrival, 2 B747 departure).
- 5 May 1995 traffic plus 100% increase in traffic excluding military traffic and helicopter flights to Gozo (Heavy traffic added: 2 B747 arrival, 2 B747 departure).
- 5 May 1995 traffic plus 125% increase in traffic excluding military traffic and helicopter flights to Gozo (Heavy traffic added: 2 B747 arrival, 2 B747 departure).

[1] SIMMOD is the FAA's airspace and airport simulation model. See Annex A for details.

2.2 SIMULATION METHOD OF A CAPACITY STUDY



The figure on the left describes the estimation of airport capacity. As the level of traffic increases so does the average aircraft delay. The delay curve rises gradually at low traffic levels but increases sharply as the airport becomes saturated with traffic. Using delay measurements, taken during the simulation, we were able to construct capacity curves for each of the simulation organisations and to then compare them.

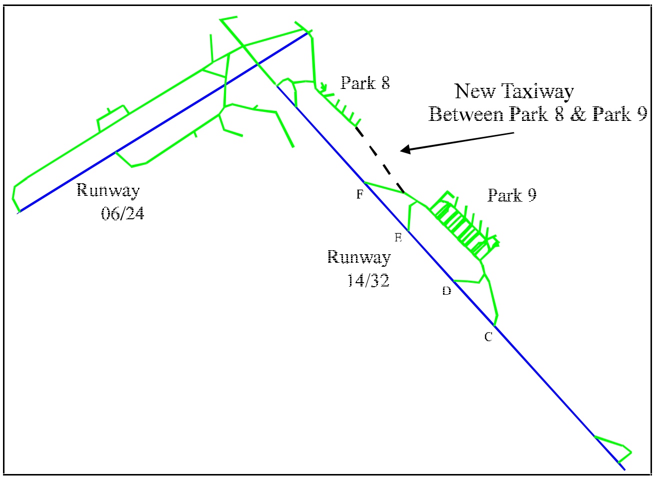
2.3 SIMULATION SCENARIOS

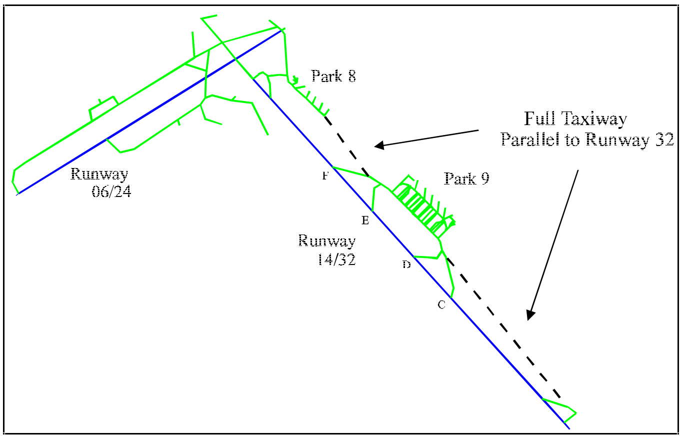
The table below gives a brief summary of the twelve scenarios used in the simulation study. The gate handling and taxiway modifications are explained in full in the following sub-sections.

	BASECASE	**MODIFICATION 1: NEW TAXIWAY FROM PARK8 TO PARK 9**	**MODIFICATION 2: NEW TAXIWAY FULL TAXIWAY ALONG RUNWAY 32**
RUNWAY 32	ORG 1: a/c nearest the terminal pull forward	ORG 3: a/c nearest the terminal pull forward	ORG 5: a/c nearest the terminal pull forward
ORIENTATION	ORG 2: a/c nearest the terminal push-back	ORG 4: a/c nearest the terminal push-back	ORG 6: a/c nearest the terminal push-back
RUNWAY 14	ORG 7: a/c nearest the terminal pull forward	ORG 9: a/c nearest the terminal pull forward	ORG 11: a/c nearest the terminal pull forward
ORIENTATION	ORG 8: a/c nearest the terminal push-back	ORG 10: a/c nearest the terminal push-back	ORG 12: a/c nearest the terminal push-back

2.3.1 TAXIWAY MODIFICATIONS

The first modified configuration included a taxiway between Park 8 and Park 9, as shown in the figure on the right.





The second configuration modification was to include a full taxiway parallel to runway 32, as shown in the figure to the left.

2.3.2 AIRCRAFT PARKING CAPACITY

In addition to the taxiway modifications, aircraft parking capacity was increased. At present, aircraft that park in front of the terminal in Park 9 require enough room to pull forward and turn in order to exit their gate. Push-backs, one of the solutions for increasing aircraft parking capacity, require less manoeuvring room than pull-forwards. Aircraft using the push-back operation could be parked closer, allowing up to four additional gates. The aircraft were modelled pulling forward and pushing back in all three configurations. Even though push-backs are not foreseen as a possibility under the present configuration, they were modelled so as to obtain a full analysis of the benefits of push-backs.

2.3.3 FINAL APPROACH OPERATIONS

BASECASE	RUNWAY 32 (Org1 & Org 2)	Runway 32 arrivals exited at taxiway E and F. Half the aircraft taking exit F overran all the exits so that backtracking was necessary. Aircraft were separated by 7 nautical miles on approach, except for aircraft following heavy aircraft which were separated by 12 nautical miles..
	RUNWAY 14 (Org 7 & Org 8)	Runway 14 arrivals exited at taxiway D and C. Half the aircraft taking exit C overran all the exits so that backtracking was necessary. Aircraft were separated by 7 nautical miles on approach, except for aircraft following heavy aircraft which were separated by 12 nautical miles.
MODIFICATION 1	RUNWAY 32 (Org 3 & Org 4)	As the new taxiway removed the need for backtracking on the arrivals (except for the 747s) in this direction, separations were reduced to wake turbulence separation (as specified in the table below) for all aircraft except those following heavy aircraft, which were separated by 12 nautical miles.
	RUNWAY 14 (Org 9 & Org 10)	as stated for the Basecase.
MODIFICATION 2	RUNWAY 32 (Org 5 &Org 6)	As the new taxiway removed the need for backtracking on the arrivals (except 747s) in this direction, separations were reduced to wake turbulence separation (as specified in the table below) for all aircraft except those aircraft following heavy aircraft, which were separated by 12 nautical miles.
	RUNWAY 14 (Org 11 & Org 12)	As the new taxiway removed the need for backtracking on the arrivals in this direction, separations were reduced to wake turbulence separation (as specified in the table below) for all aircraft except those following heavy aircraft, which were separated by 12 nautical miles.

In those organisations including the new taxiway segments, the final approach separations were decreased from 7 nautical miles (12 nautical miles behind heavy aircraft) to the separation required for wake turbulence, as specified in the table to the right.

		Leader			
		Ga	Sm	Lg	Hv
Follower	Ga	3	4	6	8
	Sm	3	3	4	6
	Lg	3	3	3	5
	Hv	3	3	3	4

maximum take-off weight in lbs
Ga (General Aviation) = a/c < 10 000
Sm (Small) = a/c < 100 000
Lg (Large) = a/c < 300 000
Hv (Heavy) = a/c > 300 000

3. MEASUREMENTS

As this study focuses on the increase in airport capacity (as reflected in annual aircraft delays), the measure of Average Total Ground Delay per aircraft was used for the analysis. A number of other measurements were also calculated, by SIMMOD, pertaining to aircraft delay and travel time. All these measures made can be found in Annex B.

4. RESULTS

To achieve the simulation objectives we examined the incremental implementation of the airport infrastructure modifications:

- Gate Handling: to investigate the effect of gate delay by using different gate handling procedures, namely, pull forward (current procedure) and push-backs (proposed procedure),

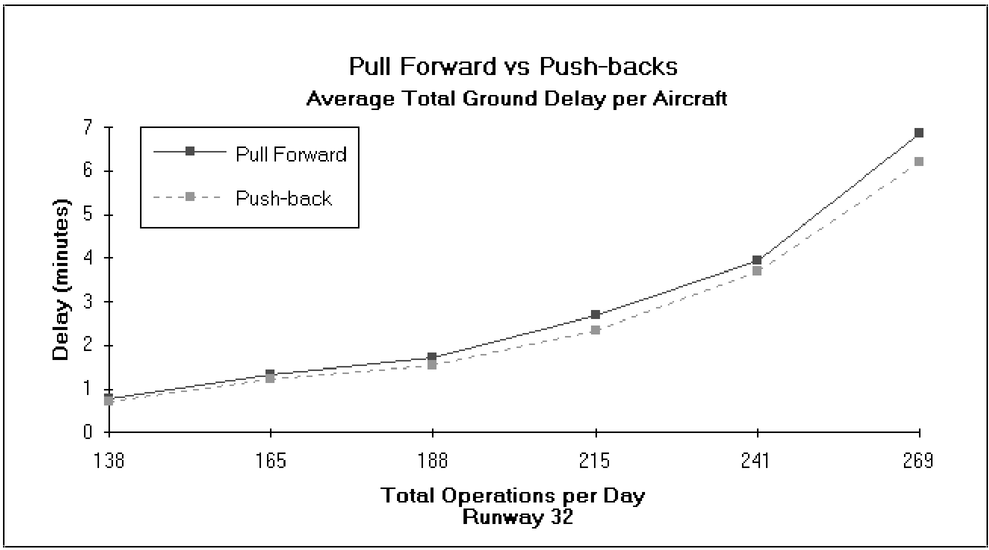
- Partial Taxiway: to discover the benefits of a new taxiway between Park 8 and Park 9 in conjunction with the two gate handling procedures, and

- Full Taxiway: to discover the benefits of a full taxiway parallel to the runway 32 in conjunction with the two gate handling procedures.

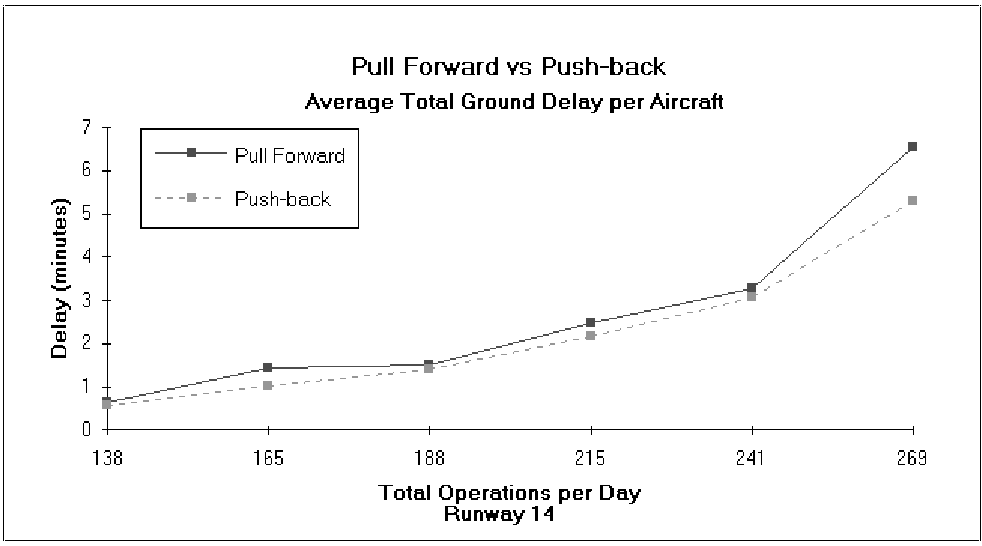
In the sub-sections that follow, we look at Total Ground Delay per Aircraft, averaged over the day, in order to ascertain the expected level of benefit from implementing the proposed changes to the airport. Then, in order to give a more tangible idea of the benefits involved a simple delay cost savings analysis was performed. This is explained in more detail in sub-section 4.4.

4.1 GATE HANDLING PROCEDURES: PULL FORWARD VS PUSH-BACKS

Implementation of the push-back gate handling procedure increased the number of available gates by four. This correspondingly reduced the delay associated with waiting for an available gate.



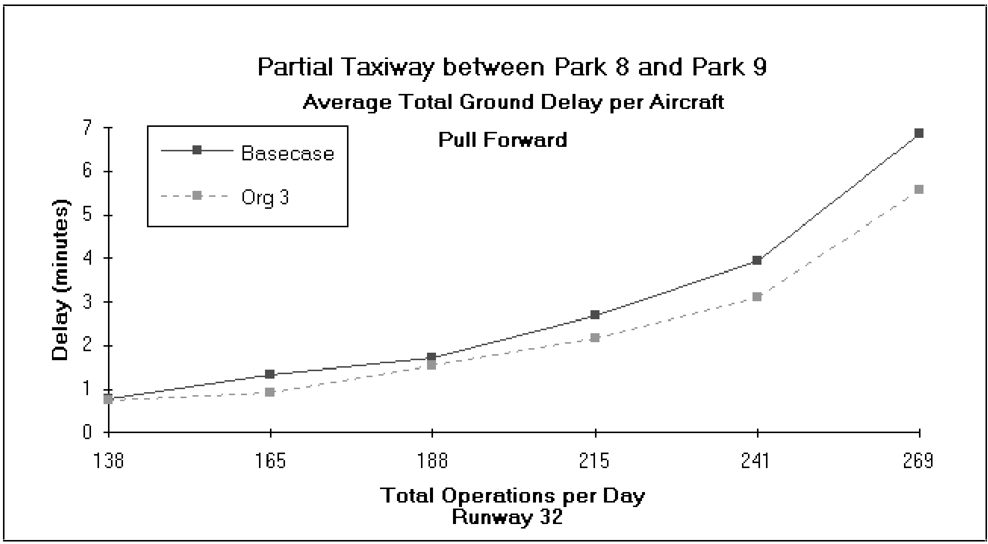
The figures above and below illustrate the Average Total Ground Delay per aircraft for each Runway orientation. While the average delays remain relatively small even after a 125% increase in traffic, it can be seen that small savings, for both runway orientations, can be expected should a push-back gate handling procedure be implemented.



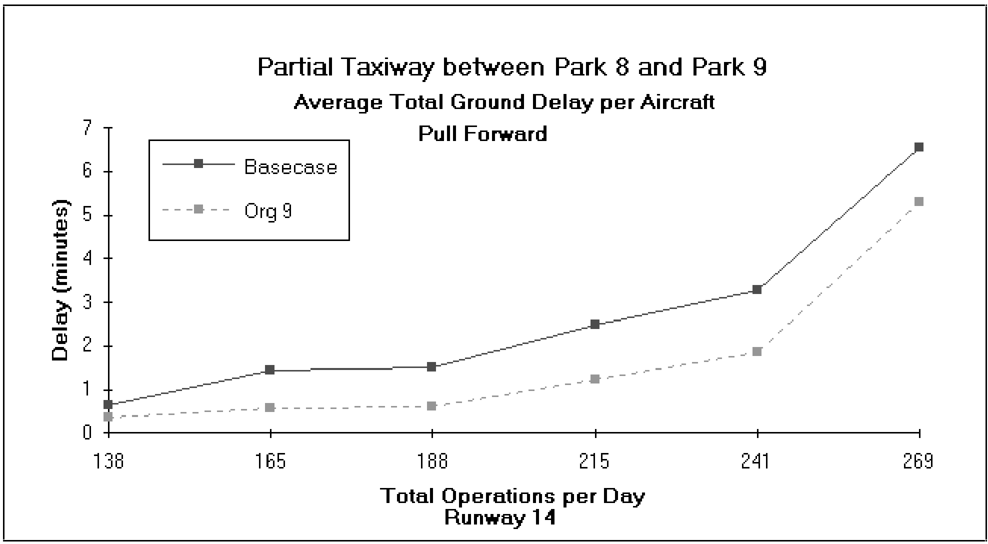
4.2 PARTIAL TAXIWAY

4.2.1 GATE HANDLING: PULL FORWARD (Organisation 3 and Organisation 9)

The implementation of the partial taxiway between Park 8 and Park 9 in conjunction with the current gate handling procedure, pull forward, reduced the overall delay figures. In particular delay for the Runway 14 orientation was reduced due to the aircraft being able to reach the departure point via a more direct route and without blocking the runway.

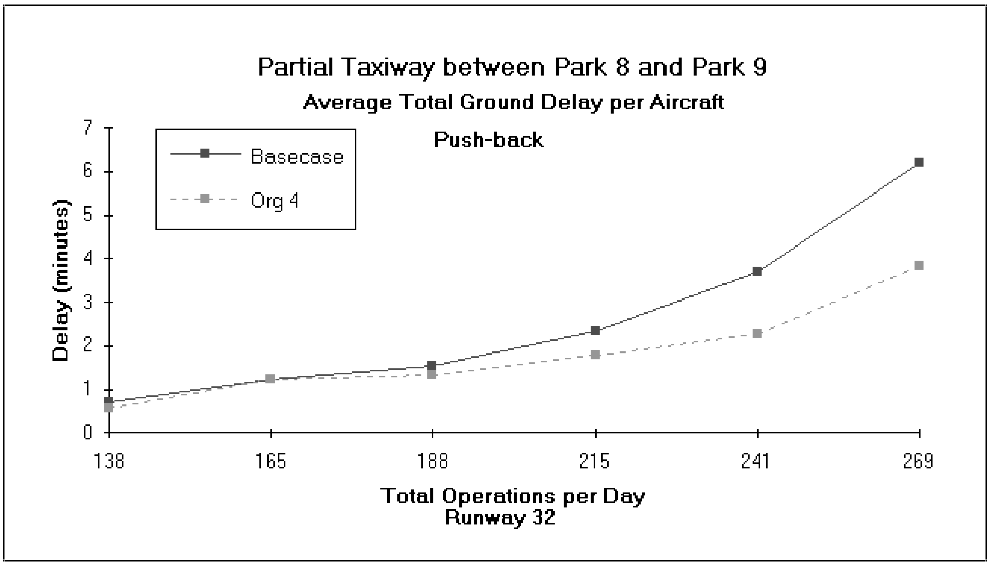


The figures above and below illustrate the Average Total Ground Delay per aircraft for both runway orientations. The initial savings in delay times increases slightly over time but as the airport becomes busier the curve becomes steeper. Runway 14 shows a more consistent savings in delay with savings of approximately one minute per aircraft.

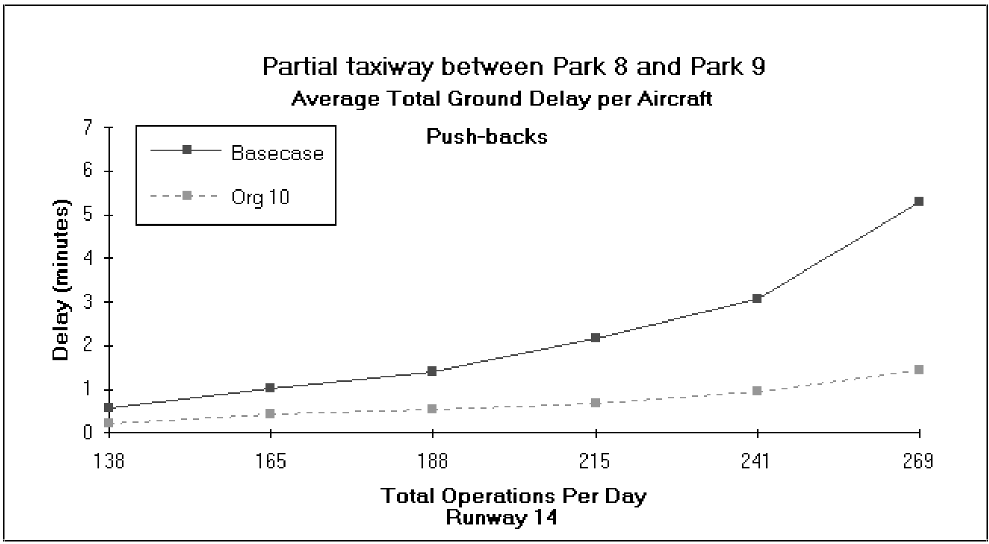


4.2.2 GATE HANDLING: PUSH-BACKS (Organisation 4 and Organisation 10)

The implementation of the partial taxiway between Park 8 and Park 9 in conjunction with the proposed gate handling procedure, push-back, had an even greater impact on the delay figures. Once more Runway 14 orientation shows more positive results due to the benefits incurred by departing aircraft using the new taxiway to reach the departure point without having to execute a U-turn on the runway.



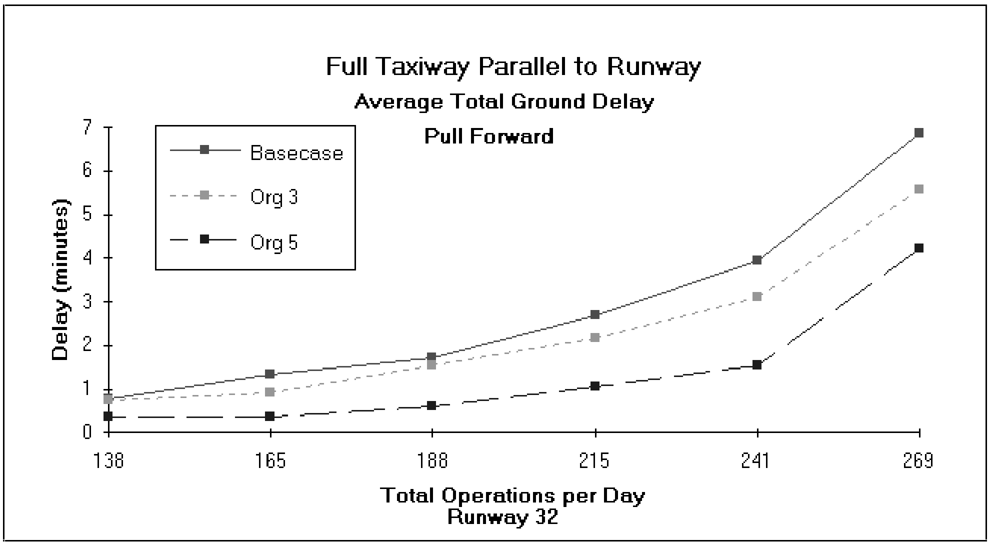
The figures above and below illustrate the Average Total Ground Delay per aircraft for both runway orientations. The benefits of implementing the new taxiway and push-backs are not experienced by Runway 32 until the traffic sample has increased by 75%. Runway 14, however, shows more positive benefits as the traffic increases over time.



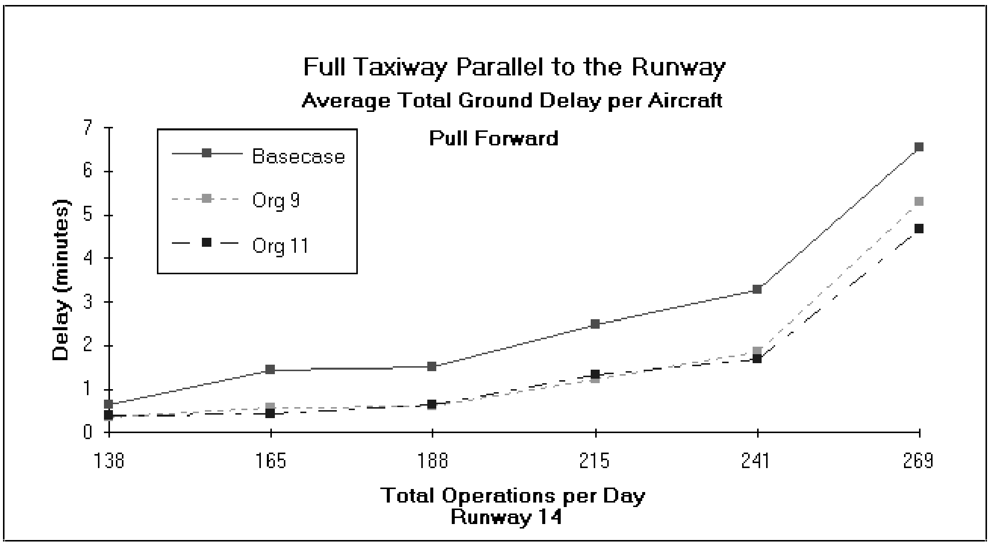
4.3 FULL TAXIWAY PARALLEL TO RUNWAY

4.3.1 GATE HANDLING: PULL FORWARDS (Organisation 5 and Organisation 11)

The implementation of the full taxiway parallel to the runway has a very positive impact on the delay figures. In particular, Runway 32 orientation shows a large reduction in average delay per aircraft as departing aircraft were able to reach the departure point more easily via the extended taxiway.

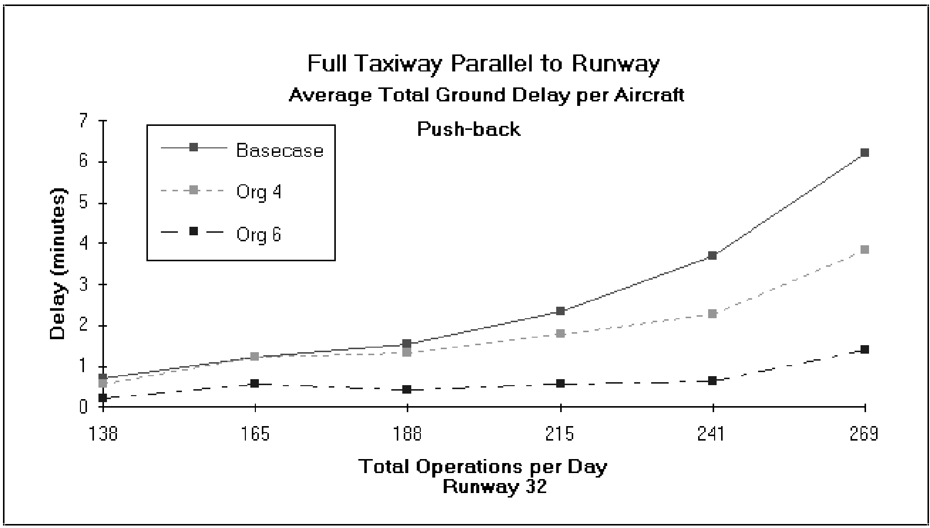


The figures above and below illustrate the Average Total Ground Delay per aircraft for both runway orientations. The implementation of a new taxiway parallel to the runway is clearly most beneficial to Runway 32, whilst for Runway 14 orientation, the most benefit is substantially achieved by the introduction of the partial taxiway between Park 8 and Park 9 (Organisation 9). This is because departures in the Runway 14 direction incurred the benefit from the partial taxiway implementation. The small additional reduction in delay for the full taxiway in direction 14 can be attributed arrivals no longer requiring a U-turn to exit the runway.

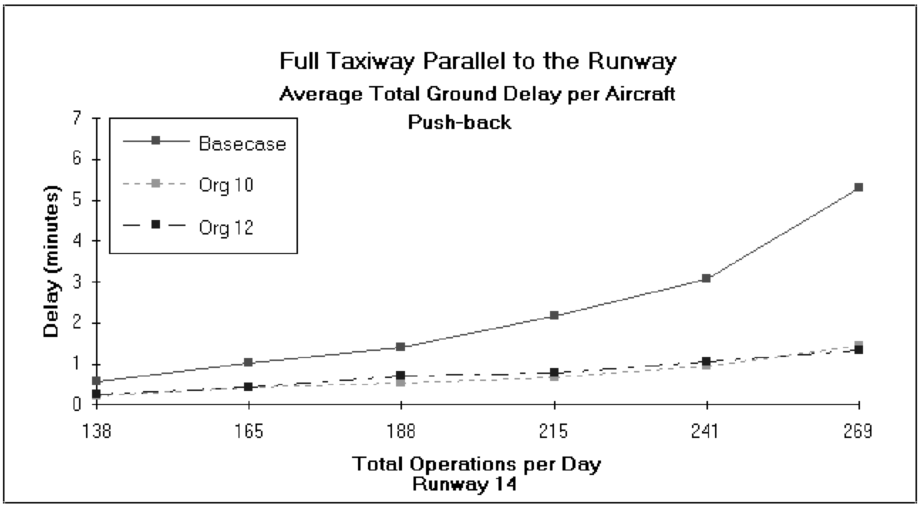


4.3.2 GATE HANDLING: PUSH-BACKS (Organisation 6 and Organisation 12)

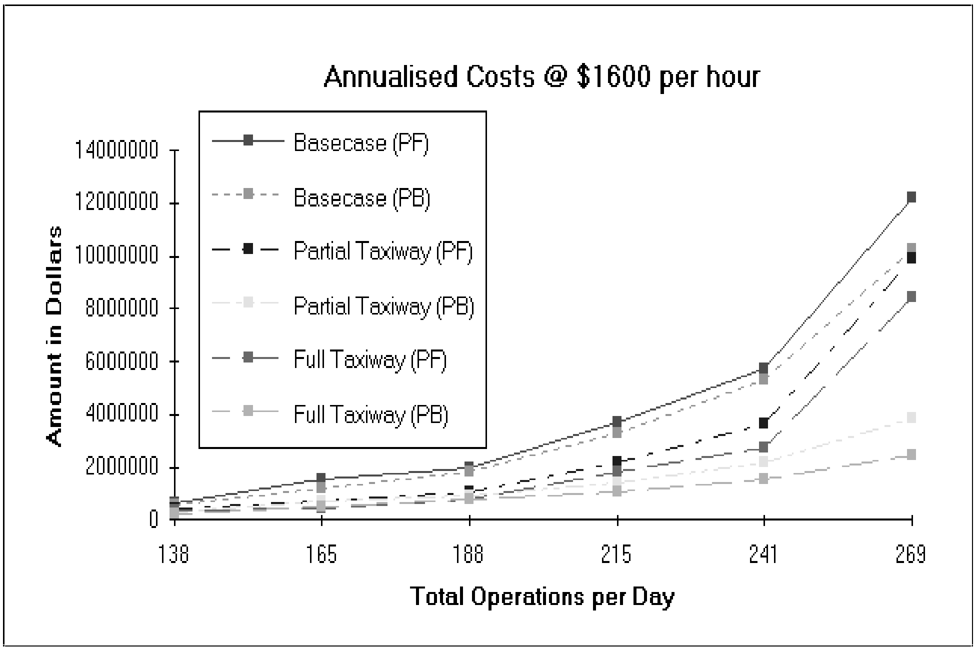
The implementation of the full taxiway parallel to the runway in conjunction with the proposed gate handling procedure, push-back, results in the largest reduction in average delay per aircraft. In particular, Runway 32 orientation shows a very marked reduction in delay as departing aircraft were able to queue very close to the runway departure point by using the extended taxiway.



The figures above and below illustrate the Average Total Ground Delay per aircraft for both runway orientations. The implementation of a new taxiway parallel to the runway is clearly most beneficial to Runway 32, whilst for Runway 14 orientation, the most benefit is already achieved by the introduction of the partial taxiway between Park 8 and Park 9. This is because departures in the Runway 14 direction incurred the benefit from the partial taxiway implementation. The small additional reduction in delay for the full taxiway in direction 14 can be attributed arrivals no longer requiring a U-turn to exit the runway. Note that push-backs provide more gates which in turn reduces the delay times as aircraft do not have to wait for an available gate.



4.4 A DELAY COST SAVINGS ANALYSIS



(Note: PB = Push-back and PF = Pull Forward)

The annualised cost figures were computed by: first averaging the daily delay per aircraft in minutes by arrivals, departures and runway. These figures were then annualised and weighted by annual percentage use for each runway (73.42% for Runway 14, 26.58% for Runway 32) to be annualised delay in minutes. Then, using a costing of $1600[2] per hour, these figures were transformed to represent annualised delay cost. The figures above illustrate these costs. Clearly the most cost-beneficial scenario is when a taxiway parallel to the runway is in use and a push-back gate handling procedure is being implemented.

Last year Luqa Airport experienced a 16% growth in traffic, should the yearly growth rate maintain this level, a total operations figure of 269 could be expected within the next five to six years. The table below illustrates what the expected differences in operating cost would be between the present situation (Basecase with pull forward gate handling) and the other five scenarios.

		Incremental Cost Variances to the Basecase ($U.S.A)					
Ops / day	Ops / year	Basecase (PF)	Basecase (PB)	Partial Taxiway (PF)	Partial Taxiway (PB)	Full Taxiway (PF)	Full Taxiway (PB)
138	35 522	0	72 770	214 568	328 258	277 068	407 387
165	42 472	0	357 053	841 593	866 870	1 114 313	1 051 694
188	48 392	0	165 122	914 726	1 049 359	1 196 150	1 181 544
215	55 342	0	449 997	1 527 857	2 293 020	1 868 285	2 678 900
241	62 035	0	373 497	2 082 850	3 570 900	2 997 838	4 150 565
269	69 242	0	2 005 832	2 303 958	8 408 716	3 815 794	9 751 594

[2] Based on marginal aircraft operating costs of $1600 per hour.

5. CONCLUSIONS

Gate Handling: Pull forward vs Push-back.

A small reduction in average delay per aircraft can be expected should the gate handling procedure be changed to push-back, given the present configuration of Luqa Airport and for each taxiway improvement.

Partial Taxiway between Park 8 and Park 9.

The implementation of a partial taxiway between Park 8 and Park 9 showed that significant benefits could be expected over time. Push-backs showed greatly increased benefits, particularly at the future traffic levels.

Full Taxiway Parallel to the Runway.

The implementation of a full taxiway parallel to the runway showed that additional benefits could be expected. When implemented in conjunction with the push-back gate handling procedure the resultant estimated annual savings were greater than for all the other scenarios.

Delay Cost Savings Analysis.

All the proposed modifications reflect a significant savings in aircraft delay cost whether implemented singularly or in conjunction with one another. The most significant savings can be expected when the gate handling procedure is push-back and a new full taxiway is implemented.

ANNEX A: SIMMOD DETAILS

I. What is SIMMOD ?

SIMMOD, the FAA Airport and Airspace Simulation Model, is a comprehensive planning tool for airport designers and managers, air traffic planners, and airlines. Analysts use the model to study and improve enroute and terminal-area air traffic, as well as airport and airline ground operations.

EUROCONTROL Experimental Centre has extended the basic SIMMOD package by creating a pre- and post-processor program. The pre-processor, called PREPMAIN, inputs airspace points (e.g. navaids), aircraft flight plans, and sector boundaries. Based on aircraft performance, PREPMAIN outputs airspace and event (flight) data in SIMMOD format. The post-processor, called STATMAIN, inputs the basic SIMMOD output file of aircraft movement and produces results of sector workload index, sector level/climb/descent analysis, geographical route, sub-route, and point loadings, and point loadings analysis by flight level.

II. How are the end results achieved ?

SIMMOD represents the air and ground system as a series of nodes (or points) connected by links. Airport nodes describe airfield locations such as gates, departure queues, or runway and taxiway intersections. Airspace nodes describe airspace locations such as navigational fixes, hold stacks, or merge points for aircraft. Airport links can represent taxiways or runways. Airspace links can represent routes. SIMMOD is extremely flexible with regard to the level of detail: the model can be applied to a specialised problem with a gate or runway structure, or to more complex problems involving several airports and a large volume of airspace.

The simulation module is the core of the SIMMOD system. The module realistically simulates the movement of every aircraft, step by step, resolving conflicts and monitoring travel and delay times. Specific rules such as overtaking in the air, shuffling aircraft in the departure queue as well as many other ATC procedures and actions either on the airfield, in the approach/departure environment or in en-route airspace can be simulated by careful selection of the input parameters.

SIMMOD is limited with respect to airspace conflict resolution in that airspace conflicts are not resolved by change of an aircraft’s flight level. Also, no detail is given regarding individual air traffic controllers or operating positions.

III. Input requirements

The SIMMOD input is constructed in a number of files and the correctness of the input data is crucial for the accuracy and realism of the simulation. The SIMMOD files constructed will contain detailed information including some or all of the following:

- Airfield data, and restrictions, (e.g. gate restrictions by airline and aircraft model, taxiway movement restrictions, departure queue logic),
- Aircraft data, and restrictions, (e.g. wake turbulence separations),
- Airspace data, and restrictions, (e.g. speeds on links by aircraft type),
- Airspace/ground interface data, (e.g. arrival and departure procedures, runway utilisation),

- Geographical boundaries of sectors, and restrictions, (e.g. sector capacity),
- Scheduling of events, (e.g. flight data), and
- Weather considerations, (e.g. wind speed and direction).

IV. Output

Standard results are output by SIMMOD and the EEC post-processor, STATMAIN. In addition to these standard reports, raw SIMMOD output files (such as the OUTCOME file, which tracks each aircraft's movement) may be used to create customised results.

Standard output data is produced in a tabular report format which may also be converted into charts and graphs. The standard report data available includes:

A. Airfields

A variety of the airfield results can be used depending on the type of study performed. SIMMOD airfield results are arranged by arrival/departure operations and time interval (hour, half hour, or quarter hour), and for a selected set of airlines, airports, or iterations.

- Airport/Runway Operations by Aircraft Type,
- Airport/Runway Operations, Demand, and Cumulative Difference,
- Airport/Runway Ground and Air Travel and Delay Times,
- Iteration Air and Ground Delay Time,
- Airport Operations by Gate,
- Airport Operations by Airline,
- Taxiing Travel and Delay Time by Gate,
- Taxiing Travel and Delay Time by Airline,
- Number of Flights with delay within specified ranges by Airport, and
- Departure Queue Length Summary.

B. Sectors

- Total number of aircraft that crossed the sectors within a specified time period,
- Maximum number of aircraft in each sector's area of responsibility at any one time within a specified time period,
- Average flight times for the sectors,
- A workload index for the sectors, and
- Number of aircraft in level flight, climbing or descending for each sector within a specified time period.

C. Points

- Rate of traffic flow over points,
- Number of aircraft climbing, descending or in level flight at a point, and

Number of potential conflicts that will require ATC intervention.

D. Routes

- Average flight times on each route and
- Number of aircraft on each route.

V. Simulation Animation

In addition to the output data, the SIMMOD post-processor module produces an animated high resolution colour display of the simulation. The animation graphics show all aircraft moving through the modelled airport and/or airspace.

The animation facilitates:

- Verification and validation of simulation, Debugging input data,
- Analysing the simulation visually, Pinpointing problem areas, and
- Demonstrating simulation validity, Presenting briefings.

ANNEX B: DATA TABLES

Delay Results for all the Malta Organisations

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Ave Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
MA1 0	ARR	68	2.97	0	0.14	0	0.14	5.9	3.04	0	1.61	0	1.61
	DEP	70	4.29	0	0	1.38	1.38	5.2	4.33	0	0	3.15	3.15
MA1 25	ARR	78	2.99	0	0.43	0	0.43	8.3	3.02	0	4	0	4
	DEP	87	4.31	0.01	0	2.11	2.12	5.8	4.29	0	0	5.38	5.38
MA1 50	ARR	90	3.04	0	0.37	0	0.37	9.5	3.06	0	3.47	0	3.47
	DEP	98	4.3	0.08	0	2.87	2.95	6.3	4.27	0.09	0	5.91	6
MA1 75	ARR	103	3.02	0	1	0	1	9.5	3.05	0	4.06	0	4.06
	DEP	112	4.35	0.09	0.24	3.9	4.23	8.4	4.38	0.04	0	9.66	9.7
MA1 100	ARR	115	3	0	0.87	0	0.87	9.7	3.1	0	2.59	0	2.59
	DEP	126	4.38	0.8	0.26	5.66	6.72	9.5	4.39	4.75	0	19.74	24.49
MA1 125	ARR	129	2.96	0	2.1	0	2.1	12.5	2.97	0	7.34	0	7.34
	DEP	140	4.4	3.53	0.36	7.37	11.26	7.4	4.4	10.96	0	26.53	37.49
MA2 0	ARR	68	2.85	0	0	0	0	5.9	2.92	0	0	0	0
	DEP	70	4.94	0	0	1.4	1.4	5.3	4.97	0	0	3.27	3.27
MA2 25	ARR	78	2.9	0	0.22	0	0.22	8.3	2.97	0	2.07	0	2.07
	DEP	87	5.29	0	0	2.12	2.12	5.8	5.15	0	0	5.4	5.4
MA2 50	ARR	90	2.94	0	0.16	0	0.16	9.5	3.04	0	1.51	0	1.51
	DEP	98	5.29	0.07	0	2.73	2.8	6.3	5.25	0.06	0	5.41	5.47
MA2 75	ARR	103	2.94	0	0.26	0	0.26	9.5	3	0	2.82	0	2.82
	DEP	112	5.32	0.09	0	4.2	4.29	8.6	5.35	0.11	0	9.69	9.8
MA2 100	ARR	115	2.92	0	0.53	0	0.53	9.7	3.02	0	6.32	0	6.32
	DEP	126	5.31	0.84	0	5.74	6.58	9.5	5.44	4.42	0	19.61	24.03
MA2 125	ARR	129	2.89	0	0.91	0	0.91	12.5	2.98	0	9.32	0	9.32
	DEP	140	5.28	3.53	0	7.57	11.1	7.4	5.4	10.82	0	26.78	37.6

Delay Results for all the Malta Organisations (continued)

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Ave Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
MA3 0	ARR	68	3.26	0.01	0.3	0	0.31	5.9	3.37	0	3.49	0	3.49
	DEP	70	4.31	0	0	1.14	1.14	5.1	4.33	0	0	3.31	3.31
MA3 25	ARR	78	3.27	0.01	0.03	0	0.04	8.6	3.3	0	0.23	0	0.23
	DEP	87	4.33	0.01	0	1.72	1.73	6.2	4.28	0	0	5.76	5.76
MA3 50	ARR	90	3.36	0.02	0.58	0	0.6	9.9	3.49	0.01	5.27	0	5.28
	DEP	98	4.32	0.06	0	2.36	2.42	5.7	4.28	0	0	4.98	4.98
MA3 75	ARR	103	3.34	0.02	0.94	0	0.96	9.2	3.41	0	2.62	0	2.62
	DEP	112	4.4	0.05	0.35	2.88	3.28	6.6	4.37	0	0	7.32	7.32
MA3 100	ARR	115	3.33	0.01	1.38	0	1.39	9.6	3.49	0	5.95	0	5.95
	DEP	126	4.4	0.1	0.77	3.81	4.68	9.1	4.43	0.39	0	7.37	7.76
MA3 125	ARR	129	3.31	0.01	5.27	0	5.28	11.7	3.62	0	8.68	0	8.68
	DEP	140	4.42	0.53	0.6	4.74	5.87	9	4.36	2.58	0	12.91	15.49
MA4 0	ARR	68	3.07	0.01	0	0	0.01	5.9	3.17	0	0	0	0
	DEP	70	4.96	0	0	1.13	1.13	5.2	4.96	0	0	3.47	3.47
MA4 25	ARR	78	3.1	0.01	0.69	0	0.7	8.6	3.18	0	6.24	0	6.24
	DEP	87	5.32	0.01	0	1.69	1.7	6.1	5.12	0	0	5.66	5.66
MA4 50	ARR	90	3.18	0.02	0.12	0	0.14	9.9	3.38	0.01	1.08	0	1.09
	DEP	98	5.29	0.07	0	2.4	2.47	5.7	5.2	0	0	4.99	4.99
MA4 75	ARR	103	3.18	0.02	0.25	0	0.27	9.4	3.21	0	2.74	0	2.74
	DEP	112	5.32	0.04	0	3.13	3.17	6.9	5.12	0	0	7.47	7.47
MA4 100	ARR	115	3.16	0.01	0.26	0	0.27	9.6	3.34	0	2.78	0	2.78
	DEP	126	5.31	0.1	0	3.98	4.08	9.3	5.19	0.25	0	7.21	7.46
MA4 125	ARR	129	3.13	0.01	1.44	0	1.45	11.6	3.51	0	11.63	0	11.63
	DEP	140	5.31	0.82	0.08	5.14	6.04	9.2	5.35	3.9	0	14	17.9

Delay Results for all the Malta Organisations (Continued)

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Ave Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
MA5 0	ARR	68	3.18	0.01	0.3	0	0.31	5.9	3.29	0	3.5	0	3.5
	DEP	70	5.13	0	0	0.38	0.38	5.2	5.17	0	0	1.15	1.15
MA5 25	ARR	78	3.2	0.01	0.19	0	0.2	8.6	3.23	0	1.7	0	1.7
	DEP	87	5.2	0.02	0	0.5	0.52	7.2	5.23	0.08	0	2.03	2.11
MA5 50	ARR	90	3.27	0.02	0.54	0	0.56	9.9	3.38	0.01	4.95	0	4.96
	DEP	98	5.21	0.04	0	0.64	0.68	8.1	5.29	0.01	0	1.66	1.67
MA5 75	ARR	103	3.28	0.02	0.91	0	0.93	9.4	3.33	0	1.49	0	1.49
	DEP	112	5.3	0.03	0.38	0.78	1.19	8	5.25	0.01	0	2.45	2.46
MA5 100	ARR	115	3.24	0.01	1.47	0	1.48	9.6	3.31	0	5.21	0	5.21
	DEP	126	5.34	0.04	0.69	0.84	1.57	8.9	5.34	0.17	0	1.82	1.99
MA5 125	ARR	129	3.22	0.01	6.68	0	6.69	11.7	3.6	0.01	9.55	0	9.56
	DEP	140	5.35	0.17	0.69	1.09	1.95	8.6	5.29	0.23	0	2.37	2.6
MA6 0	ARR	68	3.07	0.01	0	0	0.01	5.9	3.21	0	0	0	0
	DEP	70	5.78	0	0	0.4	0.4	5.8	5.95	0	0	1.14	1.14
MA6 25	ARR	78	3.1	0.01	0.69	0	0.7	8.6	3.21	0	6.24	0	6.24
	DEP	87	6.2	0.01	0	0.44	0.45	7.8	6.04	0.04	0	1.74	1.78
MA6 50	ARR	90	3.18	0.02	0.12	0	0.14	9.9	3.36	0	1.08	0	1.08
	DEP	98	6.18	0.04	0	0.67	0.71	8.5	5.98	0.02	0	1.75	1.77
MA6 75	ARR	103	3.19	0.02	0.25	0	0.27	9.4	3.27	0	2.73	0	2.73
	DEP	112	6.23	0.04	0	0.79	0.83	9.1	5.98	0.02	0	2.12	2.14
MA6 100	ARR	115	3.16	0.01	0.26	0	0.27	9.6	3.31	0	2.78	0	2.78
	DEP	126	6.23	0.07	0	0.91	0.98	9.7	5.88	0.17	0	1.66	1.83
MA6 125	ARR	129	3.13	0.01	1.43	0	1.44	11.6	3.54	0	11.62	0	11.62
	DEP	140	6.25	0.15	0.08	1.18	1.41	9.6	6.09	0.3	0	2.26	2.56

Delay Results for all the Malta Organisations (continued)

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Average Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
MA7 0	ARR	68	2.96	0.01	0.2	0	0.21	5.9	2.88	0	2.38	0	2.38
	DEP	70	3.82	0	0	1.06	1.06	5.2	3.95	0	0	2.75	2.75
MA7 25	ARR	78	2.89	0.19	0.96	0	1.15	8.6	2.9	0	1.7	0	1.7
	DEP	87	3.95	0	0	1.68	1.68	5.8	4.03	0	0	4.84	4.84
MA7 50	ARR	90	2.93	0	0.35	0	0.35	9.5	2.94	0	3.33	0	3.33
	DEP	98	3.96	0.07	0	2.48	2.55	6.4	4.07	0.09	0	5.75	5.84
MA7 75	ARR	103	2.94	0	1.04	0	1.04	9.4	2.97	0	1.23	0	1.23
	DEP	112	3.95	0.11	0.28	3.4	3.79	8.8	4.07	0.02	0	7.18	7.2
MA7 100	ARR	115	2.91	0	0.64	0	0.64	10	2.95	0	1.38	0	1.38
	DEP	126	3.98	0.58	0.34	4.79	5.71	10.3	4.12	3.89	0	15.58	19.47
MA7 125	ARR	129	2.89	0	3.59	0	3.59	12.5	2.89	0	7.45	0	7.45
	DEP	140	4.02	2.66	0.37	6.23	9.26	8.7	4.1	10.61	0	23.09	33.7
MA8 0	ARR	68	3.04	0.01	0	0	0.01	5.9	2.92	0	0	0	0
	DEP	70	4.29	0	0	1.09	1.09	5.3	4.41	0	0	2.97	2.97
MA8 25	ARR	78	2.97	0	0.34	0	0.34	8.6	2.91	0	3.13	0	3.13
	DEP	87	4.79	0	0	1.66	1.66	5.9	4.9	0	0	4.58	4.58
MA8 50	ARR	90	3.01	0	0.23	0	0.23	9.5	2.95	0	2.18	0	2.18
	DEP	98	4.8	0.07	0	2.38	2.45	6.5	4.9	0.05	0	5.22	5.27
MA8 75	ARR	103	3	0	0.45	0	0.45	9.4	2.98	0	4.91	0	4.91
	DEP	112	4.83	0.12	0	3.64	3.76	8.9	4.89	0.22	0	7.47	7.69
MA8 100	ARR	115	2.97	0	0.47	0	0.47	10	2.9	0	5.43	0	5.43
	DEP	126	4.8	0.54	0	4.9	5.44	10.4	4.96	3.5	0	15.73	19.23
MA8 125	ARR	129	2.96	0	1.02	0	1.02	12.5	2.87	0	9.66	14.8	24.46
	DEP	140	4.78	2.88	0.01	6.35	9.24	8.8	4.88	10.85	0	22.81	33.66

Delay Results for all the Malta Organisations (continued)

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Average Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
MA9 0	ARR	6 8	3.13	0.01	0.24	0	0.25	5.9	2.86	0.01	2.76	0	2.77
	DEP	7 0	4.47	0.01	0	0.43	0.44	5.2	4.59	0.03	0	1.26	1.29
MA9 25	ARR	7 8	3.04	0.01	0.48	0	0.49	8.6	2.89	0.03	4.32	0	4.35
	DEP	8 7	4.63	0.01	0	0.61	0.62	6.8	4.73	0.02	0	2.15	2.17
MA9 50	ARR	9 0	3.13	0.01	0.3	0	0.31	9.5	2.96	0.03	2.8	0	2.83
	DEP	9 8	4.62	0.02	0	0.83	0.85	7.6	4.71	0.02	0	2.49	2.51
MA9 75	ARR	10 3	3.16	0.01	1.15	0	1.16	9.4	2.94	0.01	1.24	0	1.25
	DEP	11 2	4.63	0.02	0.31	1	1.33	7.8	4.72	0.07	0	3.28	3.35
MA9 100	ARR	11 5	3.16	0.01	1.7	0	1.71	10	2.92	0.01	5.89	0	5.9
	DEP	12 6	4.67	0.03	0.74	1.25	2.02	8.5	4.78	0.23	0	3.17	3.4
MA9 125	ARR	12 9	3.12	0.01	7.97	0	7.98	12.5	2.83	0	27.9	0	27.9
	DEP	14 0	4.73	0.05	1.37	1.42	2.84	7.6	4.73	0.06	0.01	3.21	3.28
M10 0	ARR	6 8	3.21	0.01	0	0	0.01	5.9	2.91	0	0	0	0
	DEP	7 0	4.95	0.01	0	0.45	0.46	5.2	5.01	0.03	0	1.43	1.46
M10 25	ARR	7 8	3.11	0.01	0.2	0	0.21	8.6	2.89	0.03	1.78	0	1.81
	DEP	8 7	5.46	0.01	0	0.6	0.61	6.9	5.38	0.02	0.01	2.01	2.04
M10 50	ARR	9 0	3.19	0.01	0.15	0	0.16	9.5	2.96	0.01	1.4	0	1.41
	DEP	9 8	5.46	0.03	0	0.82	0.85	7.7	5.4	0.01	0	2.49	2.5
M10 75	ARR	10 3	3.23	0.01	0.23	0	0.24	9.4	2.97	0.02	2.47	0	2.49
	DEP	11 2	5.47	0.02	0	1.07	1.09	7.9	5.28	0.07	0	3.51	3.58
M10 100	ARR	11 5	3.2	0.01	0.51	0	0.52	10	2.92	0.03	5.8	0	5.83
	DEP	12 6	5.46	0.04	0.01	1.3	1.35	8.9	5.24	0.18	0	3.26	3.44
M10 125	ARR	12 9	3.2	0.01	1.18	0	1.19	12.5	2.86	0.01	8.5	0	8.51
	DEP	14 0	5.45	0.06	0.06	1.54	1.66	8.5	5.27	0.14	0.01	3.07	3.22

Delay Results for all the Malta Organisations (continued)

Case	Arr or Dep	Total No. AC	Ground Travel	Ground Delay	Gate Delay	Queue Delay	Average Total Delay	Peak No. AC	Peak Ground Travel	Peak Ground Delay	Peak Gate Delay	Peak Queue Delay	Total Peak Delay
M11 0	ARR	68	3.3	0.01	0.31	0	0.32	5.9	3.26	0	3.54	0	3.54
	DEP	70	4.47	0.01	0	0.46	0.47	5.2	4.59	0.04	0	1.18	1.22
M11 25	ARR	78	3.23	0.01	0.15	0	0.16	8.7	3.4	0.01	1.32	0	1.33
	DEP	87	4.62	0.02	0	0.66	0.68	7.1	4.7	0.14	0	2.48	2.62
M11 50	ARR	90	3.37	0.01	0.38	0	0.39	9.9	3.61	0.01	3.49	0	3.5
	DEP	98	4.62	0.01	0	0.84	0.85	7.7	4.7	0.03	0	2.18	2.21
M11 75	ARR	103	3.39	0.01	1.23	0	1.24	9.4	3.56	0.01	3.99	0	4
	DEP	112	4.64	0.02	0.32	1.08	1.42	7.8	4.7	0.09	0.01	2.88	2.98
M11 100	ARR	115	3.38	0.01	1.41	0	1.42	9.5	3.73	0.04	2.76	0	2.8
	DEP	126	4.67	0.04	0.58	1.32	1.94	8.8	4.76	0.28	0	3.02	3.3
M11 125	ARR	129	3.33	0.01	6.62	0	6.63	11.7	3.78	0.01	15.16	0	15.17
	DEP	140	4.72	0.08	1.14	1.67	2.89	8.7	4.8	0.12	0	3.45	3.57
M12 0	ARR	68	3.38	0.01	0	0	0.01	5.9	3.31	0	0	0	0
	DEP	70	4.95	0.01	0	0.49	0.5	5.2	5.01	0.03	0	1.29	1.32
M12 25	ARR	78	3.31	0.01	0.19	0	0.2	8.7	3.42	0.02	1.67	0	1.69
	DEP	87	5.46	0.01	0	0.64	0.65	7.3	5.4	0.1	0.01	2.54	2.65
M12 50	ARR	90	3.41	0.01	0.4	0	0.41	9.9	3.64	0.02	3.6	0	3.62
	DEP	98	5.46	0.03	0	0.96	0.99	7.7	5.44	0.03	0	3.03	3.06
M12 75	ARR	103	3.44	0.01	0.31	0	0.32	9.4	3.52	0.03	3.38	0	3.41
	DEP	112	5.47	0.02	0	1.16	1.18	8.1	5.36	0.09	0	3.26	3.35
M12 100	ARR	115	3.43	0.01	0.63	0	0.64	9.5	3.7	0.02	7.6	0	7.62
	DEP	126	5.45	0.04	0	1.41	1.45	9.1	5.25	0.25	0	2.77	3.02
M12 125	ARR	129	3.4	0.01	0.59	0	0.6	11.7	3.86	0	6.13	0	6.13
	DEP	140	5.46	0.08	0.07	1.83	1.98	9.7	5.29	0.32	0	3.53	3.85

Number of Aircraft with Varying Delay.

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
MA1 0	ARR	68	66	1.5	0.4	0	0.1	0	0	0
	DEP	70	62.8	5.2	1.9	0.1	0	0	0	0
MA1 25	ARR	78	74.7	2	0.8	0.5	0	0	0	0
	DEP	87	73.6	8.1	3.8	1.3	0.2	0	0	0
MA1 50	ARR	90	80.8	5.5	2.7	0.3	0.5	0.2	0	0
	DEP	98	78	10.6	5.9	2.3	1.1	0.1	0	0
MA1 75	ARR	103	88.5	6.9	4.1	1.1	1.7	0.5	0.2	0
	DEP	112	84.2	10.9	6.8	6	3.9	0.2	0	0
MA1 100	ARR	115	97.5	10.3	3.9	2.1	1	0.2	0	0
	DEP	126	80.8	16.8	8.5	5.7	10.4	3.7	0.1	0
MA1 125	ARR	129	101.5	14.9	7.8	2.4	1.7	0.5	0.2	0
	DEP	140	78.8	16.9	10.9	6.4	7.6	12.4	3.9	3.1
MA2 0	ARR	68	66	1.5	0.4	0	0.1	0	0	0
	DEP	70	63.2	5.1	1.6	0.1	0	0	0	0
MA2 25	ARR	78	74.7	2	0.8	0.5	0	0	0	0
	DEP	87	72.8	8.6	4.3	1.1	0.2	0	0	0
MA2 50	ARR	90	80.8	5.5	2.7	0.3	0.5	0.2	0	0
	DEP	98	78.9	10.7	4.6	2.8	1	0	0	0
MA2 75	ARR	103	88.5	6.9	4.1	1.1	1.7	0.5	0.2	0
	DEP	112	79.6	14.6	6.9	7	3.7	0.2	0	0
MA2 100	ARR	115	97.5	10.3	3.9	2.1	1	0.2	0	0
	DEP	126	79.9	17.1	8.6	5.5	10.6	4.2	0.1	0
MA2 125	ARR	129	101.5	14.9	7.8	2.4	1.7	0.5	0.2	0
	DEP	140	76.6	18.7	11.7	6.5	7.8	11	4.2	3.5

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Number of Aircraft with Varying Delay. (continued)

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
MA3 0	ARR	68	67	0.9	0.1	0	0	0	0	0
	DEP	70	64.3	4.8	0.9	0	0	0	0	0
MA3 25	ARR	78	76.1	1.5	0.4	0	0	0	0	0
	DEP	87	76.9	7	2.6	0.3	0.2	0	0	0
MA3 50	ARR	90	85.2	3.9	0.8	0.1	0	0	0	0
	DEP	98	81.1	11.3	3.6	1.3	0.7	0	0	0
MA3 75	ARR	103	96.9	3.2	1.8	0.6	0.5	0	0	0
	DEP	112	89.2	12.1	6.8	3	0.9	0	0	0
MA3 100	ARR	115	107.4	5.3	1.9	0.3	0.1	0	0	0
	DEP	126	88.2	21.8	9.4	4.6	2	0	0	0
MA3 125	ARR	129	120	5.1	2.5	0.6	0.5	0.3	0	0
	DEP	140	89.9	23.5	10.8	8.6	6.7	0.5	0	0
MA4 0	ARR	68	67	0.9	0.1	0	0	0	0	0
	DEP	70	64.9	4.3	0.8	0	0	0	0	0
MA4 25	ARR	78	76.1	1.5	0.4	0	0	0	0	0
	DEP	87	77.4	6.7	2.5	0.3	0.1	0	0	0
MA4 50	ARR	90	85.2	3.9	0.8	0.1	0	0	0	0
	DEP	98	80.4	11.8	3.5	1.6	0.7	0	0	0
MA4 75	ARR	103	96.9	3	1.8	0.7	0.6	0	0	0
	DEP	112	86.3	14.6	7.2	2.9	1	0	0	0
MA4 100	ARR	115	107.4	5.3	1.9	0.3	0.1	0	0	0
	DEP	126	87.5	21.3	11.2	4.1	1.9	0	0	0
MA4 125	ARR	129	120.7	4.8	2.2	0.5	0.5	0.3	0	0
	DEP	140	88.5	21.5	10.6	9.1	7.4	2.3	0.6	0

Number of Aircraft with Varying Delay. (continued)

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
MA5 0	ARR	68	67	0.9	0.1	0	0	0	0	0
	DEP	70	69.6	0.4	0	0	0	0	0	0
MA5 25	ARR	78	76.1	1.5	0.4	0	0	0	0	0
	DEP	87	84.9	2.1	0	0	0	0	0	0
MA5 50	ARR	90	85.2	3.9	0.8	0.1	0	0	0	0
	DEP	98	95.3	2.6	0.1	0	0	0	0	0
MA5 75	ARR	103	96.9	3	1.8	0.7	0.6	0	0	0
	DEP	112	107.3	4.2	0.5	0	0	0	0	0
MA5 100	ARR	115	107.4	5.3	1.8	0.4	0.1	0	0	0
	DEP	126	121.5	3.9	0.6	0	0	0	0	0
MA5 125	ARR	129	120	5.1	2.5	0.6	0.5	0.3	0	0
	DEP	140	129	10.1	0.9	0	0	0	0	0
MA6 0	ARR	68	67	0.9	0.1	0	0	0	0	0
	DEP	70	69.5	0.5	0	0	0	0	0	0
MA6 25	ARR	78	76.1	1.5	0.4	0	0	0	0	0
	DEP	87	85.6	1.4	0	0	0	0	0	0
MA6 50	ARR	90	85.2	3.9	0.8	0.1	0	0	0	0
	DEP	98	94.5	3.5	0	0	0	0	0	0
MA6 75	ARR	103	96.9	3	1.8	0.7	0.6	0	0	0
	DEP	112	107.8	3.8	0.4	0	0	0	0	0
MA6 100	ARR	115	107.4	5.3	1.8	0.4	0.1	0	0	0
	DEP	126	119.9	5.9	0.2	0	0	0	0	0
MA6 125	ARR	129	120.7	4.8	2.2	0.5	0.5	0.3	0	0
	DEP	140	130.3	8.9	0.8	0	0	0	0	0

Number of Aircraft with Varying Delay. (continued)

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
MA7 0	ARR	6 8	65.9	1.8	0.2	0	0.1	0	0	0
	DEP	7 0	64.1	5	0.9	0	0	0	0	0
MA7 25	ARR	7 8	75	1.7	1.1	0.1	0.1	0	0	0
	DEP	8 7	76.3	7.9	1.6	1.1	0.1	0	0	0
MA7 50	ARR	9 0	81.1	5.6	2.5	0.4	0.4	0	0	0
	DEP	9 8	80.4	9.9	4.3	2.2	1.1	0.1	0	0
MA7 75	ARR	10 3	89.4	6.3	3.9	1.4	1.5	0.5	0	0
	DEP	11 2	87.5	10.4	5.3	4.2	4.1	0.5	0	0
MA7 100	ARR	11 5	97.7	10	4.3	1.8	1	0.2	0	0
	DEP	12 6	86.5	14.3	9.3	6.1	6.9	2.8	0.1	0
MA7 125	ARR	12 9	101.4	15.9	7.1	2.7	1.6	0.3	0	0
	DEP	14 0	87.9	16.4	10	3.9	6.8	9.3	3.7	2
MA8 0	ARR	6 8	65.9	1.8	0.2	0	0.1	0	0	0
	DEP	7 0	64.6	4.4	1	0	0	0	0	0
MA8 25	ARR	7 8	75	1.7	1.1	0.1	0.1	0	0	0
	DEP	8 7	76.4	7.5	2	1	0.1	0	0	0
MA8 50	ARR	9 0	81.1	5.6	2.5	0.4	0.4	0	0	0
	DEP	9 8	81.4	9.4	4	2.3	0.9	0	0	0
MA8 75	ARR	10 3	89.4	6.3	3.9	1.4	1.5	0.5	0	0
	DEP	11 2	85.6	11.4	5.8	4.6	3.9	0.7	0	0
MA8 100	ARR	11 5	97.7	10	4.3	1.8	1	0.2	0	0
	DEP	12 6	86.3	13.5	10.1	6.5	7	2.5	0.1	0

Number of Aircraft with Varying Delay. (continued)

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
MA9 0	ARR	6 8	66	1.7	0.2	0	0.1	0	0	0
	DEP	7 0	69.3	0.7	0	0	0	0	0	0
MA9 25	ARR	7 8	75	1.7	1.1	0.1	0.1	0	0	0
	DEP	8 7	84.9	2.1	0	0	0	0	0	0
MA9 50	ARR	9 0	81.1	5.6	2.5	0.4	0.4	0	0	0
	DEP	9 8	95.3	2.3	0.3	0.1	0	0	0	0
MA9 75	ARR	10 3	89.4	6.2	4	1.4	1.5	0.5	0	0
	DEP	11 2	105.8	5.2	1	0	0	0	0	0
MA9 100	ARR	11 5	97.7	10	4.3	1.8	1	0.2	0	0
	DEP	12 6	118.2	6.7	1.1	0	0	0	0	0
MA9 125	ARR	12 9	101.4	15.9	7.1	2.7	1.6	0.3	0	0
	DEP	14 0	129.7	9.2	1	0.1	0	0	0	0
M10 0	ARR	6 8	66	1.7	0.2	0	0.1	0	0	0
	DEP	7 0	69.1	0.9	0	0	0	0	0	0
M10 25	ARR	7 8	75	1.7	1.1	0.1	0.1	0	0	0
	DEP	8 7	84.6	2.3	0.1	0	0	0	0	0
M10 50	ARR	9 0	81.1	5.6	2.5	0.4	0.4	0	0	0
	DEP	9 8	94.6	2.8	0.4	0.2	0	0	0	0
M10 75	ARR	10 3	89.4	6.2	4	1.4	1.5	0.5	0	0
	DEP	11 2	104.8	6.4	0.8	0	0	0	0	0
M10 100	ARR	11 5	97.7	10	4.3	1.8	1	0.2	0	0
	DEP	12 6	118	6.6	1.4	0	0	0	0	0
M10 125	ARR	12 9	101.4	15.8	7.2	2.7	1.6	0.3	0	0
	DEP	14 0	128.6	9.9	1.4	0.1	0	0	0	0

Number of Aircraft with Varying Delay. (continued)

Case	Arr or Dep	Total No. AC	< 5 minutes delay	5-10 minutes delay	10-15 minutes delay	15-20 minutes delay	20-30 minutes delay	30-45 minutes delay	45-60 minutes delay	> 60 minutes delay
M11 0	ARR	6 8	66.9	0.9	0.2	0	0	0	0	0
	DEP	7 0	69.1	0.9	0	0	0	0	0	0
M11 25	ARR	7 8	75.8	1.6	0.6	0	0	0	0	0
	DEP	8 7	84.6	2.1	0.3	0	0	0	0	0
M11 50	ARR	9 0	84.7	4	0.8	0.3	0.2	0	0	0
	DEP	9 8	94.8	3	0.2	0	0	0	0	0
M11 75	ARR	10 3	97	2.9	2	0.8	0.3	0	0	0
	DEP	11 2	105.1	5.8	1.1	0	0	0	0	0
M11 100	ARR	11 5	106.7	5.6	2.1	0.5	0.1	0	0	0
	DEP	12 6	117	7.4	1.4	0.2	0	0	0	0
M11 125	ARR	12 9	120.5	4.7	2.5	0.4	0.5	0.4	0	0
	DEP	14 0	124.5	13.1	2.2	0.1	0.1	0	0	0
M12 0	ARR	6 8	66.9	0.9	0.2	0	0	0	0	0
	DEP	7 0	68.9	1.1	0	0	0	0	0	0
M12 25	ARR	7 8	75.8	1.6	0.6	0	0	0	0	0
	DEP	8 7	84.4	2.5	0.1	0	0	0	0	0
M12 50	ARR	9 0	84.7	4	0.8	0.3	0.2	0	0	0
	DEP	9 8	93.4	3.9	0.5	0.2	0	0	0	0
M12 75	ARR	10 3	97	2.9	2	0.8	0.3	0	0	0
	DEP	11 2	103.2	7.7	1.1	0	0	0	0	0
M12 100	ARR	11 5	106.7	5.6	2.1	0.5	0.1	0	0	0
	DEP	12 6	115.5	8.9	1.6	0	0	0	0	0
M12 125	ARR	12 9	120.5	4.7	2.5	0.4	0.5	0.4	0	0
	DEP	14 0	123.4	13.9	2.6	0.1	0	0	0	0

EUROCONTROL

Hourly Aircraft Movements for Malta Traffic May 5, 1995

Number of Takeoffs and Landings Per Hour			
Hour	Number of Arrivals	Number of Departures	Total Movements
00:00-01:00	2.7	0.7	3.4
01:00-02:00	0.3	2.3	2.6
02:00-03:00	2.3	1	3.3
03:00-04:00	1.7	4.8	6.5
04:00-05:00	1.6	3.9	5.5
05:00-06:00	2.9	4.6	7.5
06:00-07:00	0.5	4.7	5.2
07:00-08:00	2.7	2	4.7
08:00-09:00	2.8	2	4.8
09:00-10:00	1.5	3	4.5
10:00-11:00	2.9	2	4.9
11:00-12:00	4.7	3	7.7
12:00-13:00	8.3	3.9	12.2
13:00-14:00	5.9	5.2	11.1
14:00-15:00	2	5.9	7.9
15:00-16:00	3.4	4.9	8.3
16:00-17:00	2.1	2.1	4.2
17:00-18:00	5.8	4	9.8
18:00-19:00	1.9	2	3.9
19:00-20:00	2.5	3.9	6.4
20:00-21:00	3.5	1.1	4.6
21:00-22:00	3.4	2	5.4
22:00-23:00	1.6	0	1.6
23:00-24:00	1	1	2
TOTAL	68	70	138