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8.0 Traffic Forecasts and Planning Schedules

8.1 INTRODUCTION

To define the planning parameters for a passenger terminal facility, an analysis of the traffic forecasts is required together with the translation of those forecasts into detailed planning schedules. From those schedules planning hour demand flows are derived and it is these that largely drive the facility sizing.

Applying the process correctly requires a thorough understanding of the wide variety of factors involved. These include *inter alia* the view of the airport and the airlines towards unconstrained growth at the airport as a whole, the airlines' response to forecast demand from the perspective of fleet growth and route network expansion, the assignment of airlines to specific terminals, potential airport capacity constraints, and the commercial case for accommodating high peak hour flows against low off-peak utilisation.

This section summarises the discussions that have taken place in relation to traffic forecasts, outlines the process followed and summarises the decisions made in arriving at an agreed set of planning hour demand flows.

8.2 TRAFFIC FORECASTS

Predictions of the annual traffic forecasts provide the starting point for this process. Each year DAA prepare updated passenger and aircraft movement demand forecasts for the airport as a whole, adjusting the previous year's predictions and taking into account revised views on the short and long term primary and secondary traffic drivers.

Forecast 2004 (F2004), which uses the 'actual' traffic in 2004 as a basis for projecting forward, was reviewed during the early weeks of the project. The forecasting methodology was assessed to be sound and the underlying assumptions considered robust.

Traffic at Dublin Airport has exhibited strong growth over recent years with an overall CAGR of 6% in the period 2000-2005, and traffic growing at more than 1mppa per annum almost every year for the last 10 years. The presence of both Ryanair and Aer Lingus has ensured a highly competitive and dynamic market, and the combined 66% market share in 2005 of these carriers illustrates their significance.

For capacity planning purposes, DAA produces High Growth forecasts in addition to Centreline forecasts, to ensure that the development is capable of accommodating a period of high growth. The forecasts underlying the proposal in this document reflect the fact that there have recently been specific plans announced by the airlines which indicate an accelerated development at the airport over the next few years:

- **Ryanair expansion** – Ryanair announced just prior to Christmas that they would be commencing 18 new routes from Dublin in 2005 and that they would be basing 5 new aircraft there to serve the developing route network. This expansion announcement was related to the introduction of slot coordination, and marks a change in competitive policy for Ryanair vis-à-vis Aer Lingus at Dublin to a more aggressive attitude than before.
- **Change in Aer Lingus strategy and impending privatisation** – The arrival of Dermot Mannion as Chief Executive of Aer Lingus has seen a material change in direction from the strategy developed previously, moving from a simple strategy of pursuing lowest possible costs, to a vision of Aer Lingus as an efficient, high-quality short-haul and long-haul operator with specific product differentiation. This has meant that Aer Lingus has developed its medium term development plans, including fleet acquisition strategy, closely linked to its privatisation policy. It has targeted aggressive growth projections for its own operation on both long haul and short-haul.

Two additional factors, which, together with the specific plans announced by the airlines, could collectively drive towards a high growth forecast scenarios are:

- **Development of a common aviation area between the EU and the US** – Many US airlines are looking to international operations to help them trade their way out of current financial difficulties. A number of these have indicated their interest in entering or developing the strong Ireland-US market, if there were a change in the current Ireland-US bilateral arrangements. Over the last 2 years, there have been intense discussions between the EU and US about the development of a Common Aviation Area. From the time an agreement is reached, current indications suggest an 18 month transitional period would apply for Ireland, whereby the current "1 for 1" requirement regarding the relative levels of operations to Dublin and Shannon would be replaced by a "3 for 1" arrangement until restrictions were fully abolished. Thus, a substantial upwards shift in the level of Dublin-US traffic is likely to occur within the next few years.
- **Peak Hour Departures** – For airlines, it is critical to get aircraft flying as early as possible, so as to maximise the number of flying (revenue generating) hours. Thus, while the current figure of 70% of based short haul aircraft during the early morning peak period is a starting point, it is possible to envisage a 'peakier' profile developing once existing capacity constraints are removed.

New forecasts (F2005) have now been developed which take these drivers and other various scenarios for traffic development into account and based on current trends and an analysis of the above factors, the Centreline DAA traffic forecast estimates that annual traffic at the airport will exceed 30 million in 2016 or by 2015 in a High Growth scenario.

For Terminal 2, these forecasts have then been interrogated for the airline assignment proposed to provide as robust a basis as possible for the planning and sizing of the terminal, the pier and all its other related infrastructure.

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The core assumptions underlying the growth beyond 2010 in the DAA Centreline and High Growth forecasts are a 4% annual growth between 2010 and 2016 and then a 3.8% growth from 2016 to 2021.

8.3 AIRLINE ASSIGNMENT TO TERMINALS

As noted above, the DAA F2005 material deals with growth of traffic for the airport as a whole. It is necessary to make some decisions on how airlines might be assigned to terminals in order to derive the necessary planning criteria for Terminal 2. A number of airline assignment scenarios that could potentially yield an annual passenger demand of between 10 to 15mppa in Terminal 2 are feasible. These are *inter alia* a single anchor tenant only, with Aer Lingus and Ryanair being the main and obvious candidates, an anchor tenant together with other specific chosen airlines, or a wider mix of 'smaller' airlines.

Of these possible scenarios, the Terminal 2 scenario with Aer Lingus as the main anchor tenant, together with the other US carriers that operate services to and from Dublin, was identified as the likely optimum assignment. This was identified in broad terms during the Master Plan and Framework Development process in late 2005 and is supported by Aer Lingus.

In particular, the high proportion of Aer Lingus transatlantic traffic (approximately 60% of all transatlantic traffic) and other long haul routes serving proposed destinations such as Dubai and Cape Town will require wide body aircraft gates that can be accommodated on Pier E and extended Pier B. It is also compatible with an extended Pier B continuing to accommodate CBP functions in close proximity to the new terminal and, similarly, with the new Pier D primarily accommodating fast turnaround traffic. The Master Plan also

concluded that the terminal development strategy should seek to provide sufficient capacity for the assignment in Terminal 2 and an appropriate level of residual capacity in Terminal 1 to allow the remaining airlines adequate headroom for growth and at a better level of service standard. Relocating Aer Lingus to Terminal 2 was considered to provide the optimal level of residual capacity in Terminal 1.

As the Aer Lingus daily traffic pattern has a significant departure peak early in the morning and an arrivals peak late in the evening, assignment of other airlines to Terminal 2 will serve to further improve asset utilisation and operating efficiency during off-peak periods. Aer Lingus is currently a member of the oneworld alliance and, although following a recent announcement it is expected to withdraw in 2007, a number of bilateral discussions with the other alliance members are currently underway. As such, a collaborative relationship is expected to continue.

The proposed Base airline assignment for Terminal 2 is therefore:

oneworld Alliance	Other US Carriers	Other Airlines
American Airlines	Continental	Aer Lingus (oneworld Alliance member until 2007)
British Airways	Delta	Air Canada
Finnair	US Airways	
Iberia	United	
Malev (2007)		

Additionally, two other airline groupings have been analysed to determine if the utilisation of Terminal 2 can be further improved while minimising the impact on the peak hour. These are:

- Base plus SkyTeam; and
- Base plus Star Alliance.

Two other scenarios, 'Base plus other airlines handled by Servisair' and 'Base plus other airlines handled by Aviance' were considered for analysis, in recognition of the efficiencies that the third party handling agents might accrue as a result of their operations being consolidated in a single terminal facility. However, with the distribution of airlines between them changing on a regular basis, it was felt that an initial assignment on this basis would not be robust at this stage.

Refer to Section 8.9 for further discussion on the two assignments noted above.

8.4 PLANNING HORIZONS

Two primary planning horizons have been established for the planning of Terminal 2. They are the opening year of 2009 (with the first full year of operation in 2010) and approximately 2015-2016 when it is predicted that an additional phase of development on the Terminal 2 site may be required. Surface access constraints and limited aircraft gate capacity are likely to become the constraint for growth on the eastern site and it is estimated that it might accommodate up to around 35mppa in the 2015-2021 timeframe.

The decision on the appropriate size of the terminal has to reflect the opening demand, how rapidly this demand is expected to grow, and the associated service standards. The terminal size is usually set midway

along the demand curve for a specific terminal lifetime, so that for a number of years demand will be below the planning capacity (i.e. there will be a higher level of service than the target), and for a number of years demand will exceed the planning capacity (i.e. there will be a lower level of service than the target).

If airport capacity were delivered on a 'just-in-time' basis, there would be a constant series of relatively small capacity development programmes underway. However, given the complex nature and scale of airport development, this would neither be a practical nor cost-efficient manner of delivering large-scale capacity. Hence a key decision for an airport is how much headroom is required.

For Terminal 2 planning, we have adopted the midpoint demand for each phase as the planning year. Specifically, for Phase 1 which is projected to operate from 2010 to 2015-2016, we have adopted 2013 as the planning year. For Phase 2, which is expected in 2015-2016 and to continue until the eastern site is fully utilized in approximately 2021, 2018 has been used as the planning year.

8.5 PEAK HOUR PLANNING DEMAND

As described above, three forecast scenarios were examined to determine the extent of traffic to be accommodated in Terminal 2 for opening Phase 1 and a subsequent Phase 2 – DAA Centreline, DAA High Growth and Airline Growth Strategy. As noted, in order to allow for some growth at a reasonable level of service after opening, the initial phase is sized to accommodate traffic projected for 2013. Similarly, the second phase is sized for traffic projected for 2018 although the actual timing of this phase may be adjusted depending on how demand emerges over time.

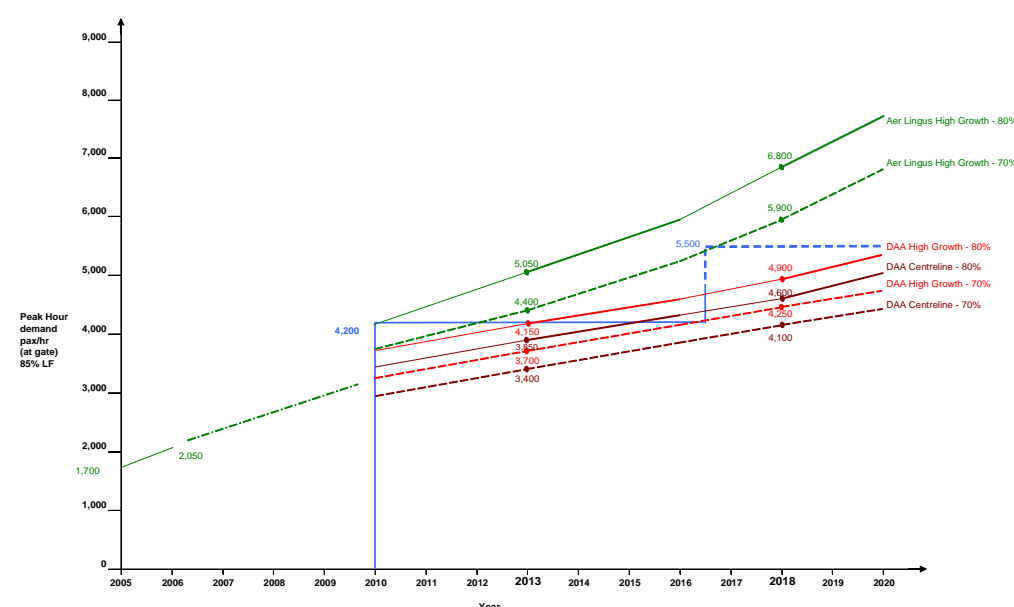
For Terminal 2, the key forecast parameters for terminal sizing are the number of Dublin-based aircraft and the percentage of those departing in the morning peak hour. The number of Dublin based aircraft differs for each of the three forecasts. In addition, two proportions of the based aircraft departing in the peak hour were considered, 70% and 80%. 70% is the percentage of Aer Lingus' based fleet departing in the peak hour currently. 80% was considered a reasonable sensitivity case given the current percentage and the operating imperative to launch as many of the based aircraft in the early morning period as possible.

Table 8.1 below summarizes the 2013 and 2018 peak hour departure flows. For the Airline Growth Strategy case, the 5% to 10% range in the annual growth of the A320 fleet has been simplified to the midpoint at 7.5%. For 2013, taking the average of all the forecasts and applying a +/- range of 5% yields an expected peak hour departures demand of between 3,885 and 4,294. For 2018, the values range widely from 4,123 to 6,817 with an average of 5100. To reflect the increased level of uncertainty in long term forecasting, a wider variation of +/- 10% on the average is considered reasonable, giving a demand of between 4,590 and 5,610.

Forecast Scenario	2013	2018
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Table 8.1 Peak Hour Departure Flows

The demand curves for the three forecast scenarios are shown in the graph below.



8.6 TERMINAL PLANNING CAPACITY

The graph shows the range of possible peak demand curves through to the year 2020. Decisions on the size of the initial build and timing and size of the subsequent expansion needs to strike the right balance between the most likely demand level, the risk and consequences if these are exceeded or not reached by any particular date and the investment required and return on that investment.

As noted above, the 2013 +/-5% range yields an expected peak hour departures demand of between 3,885 and 4,294. A mid to upper value in this range of 4,200 has been selected for planning purposes. For 2018, the expected peak hour departures demand is between 4,590 and 5,610. Given the increased uncertainty with longer term planning, a +/-10% range has been considered and a mid to upper range value of 5,500 has been selected.

It should be noted that this is likely to represent the maximum development of Terminal 2. While this is near the upper end of the expected values, it is significantly below the maximum generated by the forecasts considered, representing only about 80% of the highest peak hour projection.

The graph above indicates the agreed capacity curve, shown in blue, which reflects the two planning values and provides a sensible balance between the factors involved.

Thus, the terminal shall provide on opening in 2009, a one-way morning peak hour capacity of 4,200. It shall then safeguard for a second phase of construction for an additional peak departing capacity out to 5,500 passengers per hour at or around 2015. However, the timing and precise scale of this second phase will depend on exactly how demand develops over time.

8.7 PLANNING DAY DEMAND

The planning day schedules have been developed to reflect the selected departures peak hour planning volumes and the aircraft rotation cycles associated with those movements. The flights in the 4,200 and 5,500 peak hour schedules were generated by DAA in their F2005 forecast work. However, adjustments were made to some flights to more closely represent the peaking pattern inherent in the planning parameters as discussed in Section 2.5. The planning day schedules were developed as described below.

Phase 1 Schedule (2010-2015):

- DAA provided a 2010 high growth forecast schedule for the base planning day (Friday July 28). Based on an analysis of historical traffic, this schedule represents a 95% peak hour consistent with the common Busy Hour Rate definition. An 85% load factor was assumed for scheduled flights consistent with the 2006 Dublin Airport Capacity Declaration. *Text removed.*
- Text removed.*

Phase 2 Schedule (2015-2020):

- As previously mentioned, DAA developed a 2016 high growth forecast schedule for the base planning day (Friday July 28). Based on an analysis of historical traffic, this schedule represents a 95% peak hour consistent with the common Busy Hour Rate definition. An 85% load factor was assumed for scheduled flights consistent with the 2006 Dublin Airport Capacity Declaration. *Text removed.*
- Text removed.*

The resulting planning day profiles and schedules are attached in Appendices A and B.

Planning day profiles are shown for each planning phase, as all sector traffic and split by EU and Non-EU traffic. Key comparative information about the schedules is shown in the following table.

Schedule	Daily			Peak Hour			
	Arrivals	Departures	Total	Arrivals	Departures	Combined	US Pre-Clearance
Phase 1 - Passengers	20,829	21,186	42,015	2,464	4,144	4,622	1,390
Phase 1 - Flights	125	127	252	16	28	31	5
Phase 2 - Passengers	25,718	26,075	51,793	2,908	5,476	5,954	1,597
Phase 2 - Flights	155	157	312	19	37	40	6

Table 8.2 Daily and Peak Hour Planning Schedule Volumes

8.8 ANNUAL TRAFFIC VOLUMES

The DAA High Growth forecasts contain estimates of the airport-wide passenger volumes to the year 2030. As the High Growth forecast planning day schedules have been used as the base for the planning schedules, the relationship between the daily volumes in the schedule and the annual volumes in the forecast can be used to estimate the annual forecasts associated with various airline assignments for the Phase 1 and Phase 2 development of Terminal 2.

The following table illustrates the planning day traffic volumes, based on an 85% load factor, generated by each of the High Growth schedules provided by DAA, together with the relevant annual forecast. From this, a ratio can be established which is approximately 0.0038 in 2010 and 0.0035 for both 2016 and 2021 (i.e. daily volume divided by 0.0035 yields the annual forecast). These are shown in Table 8.3 below.

Schedule	Daily Passenger Volume	Annual Forecast	Ratio
2010	95,900	24,949,198	0.0038
2016	107,400	30,655,114	0.0035
2021	123,093	35,629,514	0.0035

Table 8.3 DAA Forecast Daily to Annual Volume Ratios

These ratios can then be applied to the daily volumes generated by the planning day schedules for the Base airline assignment (See Section 8.3) in Phases 1 and 2, to estimate the associated annual volumes, as shown in Table 8.3 below.

Phase	Planning Day	Annual Forecast
1	42,015	11,436,847
2	51,793	14,886,686

Table 8.4 Base Airline Assignment Planning Day and Annual Volumes

8.9 ALTERNATIVE AIRLINE ASSIGNMENT SCENARIOS

Terminal 2 is being designed as a multi-airline preferred use facility. As such, the primary planning consideration is the peak hour demand and the individual carriers are less critical at this stage in the process. The previous section summarised the estimated annual volumes for the Base airline assignment. Using the same approach, Table 8.5 below illustrates the Phase 1 and Phase 2 annual projections associated with the two alternative airline assignments referred to in Section 8.3, which have been tested as part of the Terminal 2 Planning process.

PHASE 1:

Airline Assignment Scenarios	Planning Day	Annual Forecast
Base	42,015	11,436,847
Base + SkyTeam	44,822	12,200,937
Base + Star Alliance	47,276	12,868,937

PHASE 2:

Airline Assignment Scenarios	Planning Day	Annual Forecast
Base	51,793	14,886,686
Base + SkyTeam	54,686	15,718,211
Base + Star Alliance	57,268	16,460,347

Table 8.5 Phase 1 and Phase 2 Planning Day and Annual Volumes.

While the annual volumes vary widely, the more important factor for terminal planning is the peak hour demand values. Table 8.6 below summarises the variance between the planning values and the three airline assignments for the arrival peak hour, departure peak hour and annual volume.

Airline Assignment Scenario	Phase 1			Phase 2		
	Annual	Peak Hour		Annual	Peak Hour	
		Arrival	Departure		Arrival	Departure
Planning Value		2500	4200		3000	5500
Base	0%	-1.4%	-1.3%	0%	-3.1%	-0.4%
Base + SkyTeam	6.7%	1.7%	2.3%	5.6%	-0.4%	2.3%
Base + Star Alliance	12.5%	5.2%	6.5%	10.6%	6.3%	5.5%

Table 8.6 Variance from Planning Value

The planning for Terminal 2 is based on a Programme of Requirements using the agreed peak hour planning flows and a target LOS C. As the Level of Service framework gives a range of space standard provision, within this framework there is flexibility to accept some increase in the peak hour flows, possibly up to 5% or so, with only a relatively modest impact on the level of service.

The 'Base + SkyTeam' assignment has only a small 2% impact on the peak hour flows but would increase the annual volume by approximately 7%, to a Phase 2 projection of 15.7mppa. The 'Base + Star Alliance' assignment has a higher impact on peak flows of approximately 6%, and would increase the annual volume by approximately 13% to a Phase 2 projection of approximately 16.5mppa.

This increase to 16.5mppa, may not be acceptable on the basis that the Eastern Campus has largely been conceived of through the master planning and consultation period as being, in broad terms, a 35mppa campus, primarily due to perceived constraints within the 'wider' surface access system. Assuming that T1 has a residual operating capacity of approximately 20mppa, an additional 16.5mppa in T2 would start to take the total annual throughput above the 35mppa on the Eastern Campus and towards 40mppa.

Presuming this is acceptable, the 'Base + SkyTeam' and 'Base + Star' assignments could be accommodated in T2, with an increase in utilisation resulting from the higher annual volumes but with only a relatively modest increase in the peak flows.

Notwithstanding, potentially the most significant constraint to adopting any one of these assignments is the impact on gate demand, in particular contact gate demand. The assignments require additional contact gate capacity in the peak hour which, because of the limited number of gates available, especially in the 4,200 condition, would result in further use of bussing stands and a further reduction in level of service against the performance target of % of passengers served through contact stands in the peak hour.

See Section 6 for further detailed discussion on this.

Although the assignments discussed have the advantage of improving the utilisation and efficiency of the terminal while not impacting significantly on the peak hour flows, DAA and DA would need to consider the trade-off between that and the inconvenience to the airlines of operating an increased number of aircraft during the peak hour from remote bussing stands. If, for example, DAA were to additionally assign SkyTeam to Terminal 2, CityJet with its based BAe146 fleet would not under the current stand allocation rules have access to a contact stand during the peak period.

In summary, as currently conceived the terminal facility could in principle accommodate three airline assignment scenarios:

- The 'Base' assignment (Aer Lingus + oneWorld + US Carriers + Air Canada);
- The 'Base + SkyTeam' assignment; and
- The 'Base + Star Alliance'.

The core terminal processes are adequately sized to handle the peak hour flows without significant drop in level of service standards and the additional occupancy over and above the Base would improve the utilisation of the terminal in the off-peak periods and in terms of annual volumes. However, due to the constrained number of available gates, the additional contribution to the peak, albeit small, would result in a further increase in the use of remote bussing stands, and DAA would need to consider the wider implications of potentially higher annual volumes than those assumed in the master planning context. At this stage, there is considered to be sufficient flexibility in the non-critical front-of-house space and core back-of-house areas to accommodate the additional occupancy if required – but this would need further detailed assessment during design development to clarify that this is the case.

9.0 Aircraft Gating Requirements

9.1 BACKGROUND

To determine the required aircraft gate capacity for Terminal 2, a gating analysis has been undertaken to ascertain both daily and peak hour requirements for contact stands and remote positions. This section describes the results of the gating analysis, which is based on the traffic forecasts, planning schedules and airline assignment described in Section 3 and the resulting one-way peak flows of 4,200 departing passengers for Phase 1 and 5,500 departing passengers for Phase 2.

In broad terms, the objective of the analysis has been to maximise the use of contact gates and minimise the use of remote gates. Aer Lingus has expressed a clear preference for pier served gates and for limiting the amount of bussing. The other airlines to be assigned to Terminal 2 are also understood to have a similar preference, especially the US carriers serving long haul destinations with wide-body aircraft. Indeed, Dublin Airport's *Stand Allocation Rules* specify that aircraft size and priority flights such as "Transatlantic services using INS facilities" take precedence for air bridges and contact stands, which means that all US wide-body aircraft should be gated on a pier connected to Terminal 2.

At this stage, only Terminal 2 and its associated piers have been included in the gating assessment. It has been assumed that Pier E, Pier B (and its extension) and the proposed Pier F shall be available for T2 related traffic.

With regard to Pier B and its extension, this is currently scheduled for completion in 2010/2011, but for the purposes of this gating exercise it has been assumed that it shall be operational to help accommodate the 4,200 peak hour traffic demand. If the pier extension is not operational or is significantly delayed, some flights allocated to Pier B gates will need to be reallocated elsewhere.

Pier F is not currently in the Capital Investment Programme but in capacity terms will essentially be required for the 5,500 peak hour demand.

Remote positions have been generated where flights could not be assigned a contact position or where they have been towed off stand if they have long ground times.

An airport wide gating exercise will be carried out to assess the potential gating demand across the whole of the airport, or across both terminals, up to 2021. By assessing the impact of T2 and its associated construction phases, as well as infrastructure works elsewhere on the airfield related to Pier D, Aprons 6A and 6B etc, a wider gating exercise will serve to identify how the overall demand/capacity relationship builds and how any the system wide constraints are likely to develop over time. The T2 gating analysis shall be cross checked against the results of the airport wide gating as required.

9.2 ASSUMPTIONS AND CRITERIA

The T2 gating analysis assumes the following overall stand layout::

- Pier E South – either 9 narrow-body Code C stands, or 3 wide-body Code D/E stands, assuming a 2-for-1 narrow-body to wide-body ratio, plus an additional 3 narrow-body Code Cs;
- Pier E North – 5 wide-body Code D/E stands or 10 narrow-body Code C stands, assuming a 2-for-1 narrow-body to wide-body ratio;
- Pier B South – 4 wide-body Code D/E stands or 8 narrow-body Code C stands, assuming a 2-for-1 narrow-body to wide-body ratio;
- Pier B North – either 7 narrow-body Code C stands or 3 wide-body Code D/E stands, assuming a 2-for-1 narrow-body to wide-body ratio plus 1 additional narrow-body Code C; and Pier F - 10 narrow-body Code C stands (for Phase 2 5,500 peak hour scenario only).

Drawing T2-AS-AP-SK-0001 given in Appendix E has been used as the primary stand layout for this gating. In addition, indicative layouts for Pier F and Pier B North, shown in Drawings T2-AS-AP-SK-0013 and 0014 in Appendix E respectively have been used. Both the primary and indicative layouts have been derived from a comprehensive review of aircraft clearances, separations and bridging requirements to ensure that there is full compliance with ICAO Annex 14 SARP's and DAA planning standards as given in DAA's *Airside Apron and Taxiway Planning Guidelines*, dated 8th July 2005.

The key criteria applied are:

- All US transatlantic services on Pier E (due to the temporary INS facility being located in Pier E);
- Priority for Aer Lingus aircraft on Pier E over other carriers;
- Priority for wide-body aircraft on contacts over narrow-body aircraft;
- Preference for higher utilisation of narrow-body gates on Pier F over narrow-body stands on Pier B in the 5,500 peak hour scenario i.e. safeguarding Pier B for use by wide-body aircraft.

Gating has been undertaken in accordance with the document titled *Dublin Airport Stand Planning Rules* (1st December 2001).

Key gating assumptions therein include:

- Narrow-body gates are assumed to accommodate all aircraft up to but not including 36m wingspan and maximum length of 45.1m;
- Wide-body gates are assumed to accommodate all aircraft up to but not including 65m wingspan and maximum length of 71m;
- In some instances, aircraft with ground times in excess of 3 hours shall be towed away from contact gates to remotes - and towed back to a contact gate for departure. This enables other flights to be accommodated on contacts; and
- A minimum 10 minute buffer is maintained between flights using the same gate. As agreed with Dublin Airport, this buffer can be included in the tow time.

Tow times by aircraft code are shown in the table below:

Code	Up to, but not including Wingspan (m)	Tow On	Tow Off
B	24.0	30	30
C	36.0	60	60
D	52.1	90	90
E	65.0	90	90

9.3 GATING REQUIREMENTS

9.3.1 4,200 PEAK PLANNING SCHEDULE:

For the 4,200 planning schedule, there are a total of 34 narrow-body gates provided between Pier E and extended Pier B; 19 gates on Pier E and 15 on extended Pier B. However, to accommodate 5 early morning wide-body arrivals, the equivalent of 10 narrow-body stands are lost due to adjacency restrictions, reducing overall available narrow-body stand capacity to 24.

The early morning departures peak comprises 28 narrow-body movements and accordingly there is a shortfall of 4 narrow-body contacts in the morning peak. Bussing operations will be required to these 4 active remote positions.

The percentage of passengers served by contact gates in terms of two-way flow during this early morning period equates to 87%. Major UK airports aim to have 90% to 95% of peak hour passengers pier served.

As noted above, Pier B extension is not programmed for completion until beyond Terminal 2 has opened (2010/2011). Until extended Pier B is operational, gates will be required elsewhere on other piers, or remotely, to accommodate the extended Pier B portion of the narrow-body peak demand. If gates are provided remotely, the number of active bussing positions will increase from 4 to 10 stands for the early morning departures peak meaning a significant level of bussing operations. The percentage of two-way peak hour passengers served by contact would drop to 68%, which would represent a low level of service.

In terms of the airline assignment variants discussed in Section 3, the early morning departures peak is increased by 2 and 3 movements respectively with SkyTeam and Star Alliance assigned to T2. For the SkyTeam allocation, both departures in the peak are CityJet 146s and as these are smaller than Aer Lingus's A320s, these would be allocated to active remote positions. CityJet have stated a preference for contact gates. For the Star Alliance assignment, BMI's A321 will take a contact stand in preference to an Aer Lingus 320 but Lufthansa and LOT will both need to be accommodated on bussed remotes. The number of bussed narrow-body remotes increases from 4 to 6 and from 4 to 7 stands respectively with the SkyTeam and Star Alliance assignments.

For the 'Base + Servisair' assignment, the early morning departures peak is increased by 2 movements, meaning a shortfall of 6 narrow body contacts. In airline terms, Monarch would take a contact stand in preference to an Aer Lingus 320, but the additional LOT flight will need to be accommodated on a bussed remote.

With the 'Base + Aviance' assignment, the early morning departures peak is also increased by 2 movements, meaning a shortfall of 6 narrow body contacts that will require bussing operations. The BMI A321 would take a contact stand in preference to an Aer Lingus 320 but the additional Lufthansa flight will need to be accommodated on a bussed remote.

All US transatlantic departures can be accommodated on the available wide-body stands on Pier E. Three wide-body stands are required on Pier B to accommodate US transatlantic arrivals and flights to/from Canada and the Far East.

All overnighting aircraft that are not parked on a contact gate are towed on to stands from remotes between 90 and 60 minutes before departure. In addition to the 4 active remotes discussed above, a peak of 9 towing remotes is required overnight comprising 1 wide-body position and 8 narrow-body stands (00:00 to 07:00). These 8 narrow-body tows essentially represent the Aer Lingus Dublin based fleet which are on the ground but not contributing to the first wave of departures. 7 wide-body remotes are required for tows between 07:00 and 14:00.

Apron 6A and B will provide remote capacity to the west of Runway 16/34 and it is assumed that these remotes will be available to the extent required. Airside simulation

work scheduled for summer 2006 will examine the feasibility of towing aircraft from the Phase 6 apron to the existing apron area during the peak departure period. The airport wide gating assessment will review whether sufficient remote capacity exists to enable this towing operation to take place.

Figure 9.1 below summarises the 4,200 gate utilisation (including remotes).

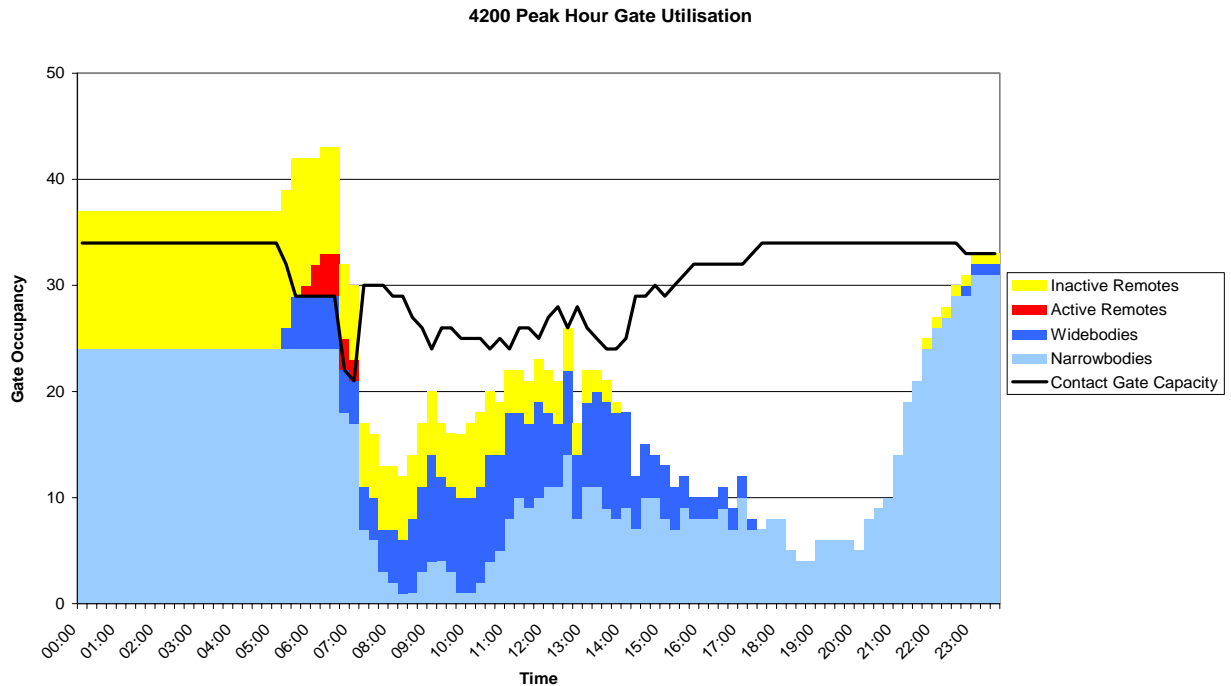


Figure 9.1 Gate Utilisation for the 4,200 Schedule

The supporting 4,200 gating Gantt chart is shown in Appendix C/1. The all sector and EU/Non-EU daily ATM departures and arrivals profiles are shown in Appendix A.

9.3.2 5,500 PEAK PLANNING SCHEDULE:

For the 5,500 planning schedule, there are 44 narrow-body gates provided between Pier E, Pier F and extended Pier B; 19 gates on Pier E, 10 on Pier F and 15 on extended Pier B. As with the 4,200 schedule, owing to 5 early morning wide-body arrivals, the equivalent of 10 narrow-body stands are lost due to adjacency restrictions, reducing available narrow-body stand capacity to 34.

The early morning departures wave comprises 37 narrow-body movements and accordingly there is a shortfall of 3 narrow-body contacts in the morning peak. Bussing operations will be required to these 3 active remote positions. The percentage of the two-way peak passenger flow served by contact gates during this early morning period equates to 93%.

The early morning departures peak is increased by 2 movements under the SkyTeam, Servisair and Aviance assignments. Star Alliance increases the peak by 3 movements

when compared to the Base allocation. The number of bussed narrow-body remotes increases to 5 stands with SkyTeam, Servisair and Aviance and to 6 stands with Star Alliance on Terminal 2. The airlines affected are as documented above for the 4,200 schedule.

All US transatlantic departures can be accommodated on Pier E. Any additional US departures would need to be accommodated on Pier B.

A peak of 12 towing remotes is required during the morning departures peak (00:00 to 07:00), comprising 11 narrow-body remotes and 1 wide-body remote. 8 wide-body remotes are required for tows between 07:00 and 14:00.

Figure 9.2 below summarises the 5,500 gate utilisation (including remotes).

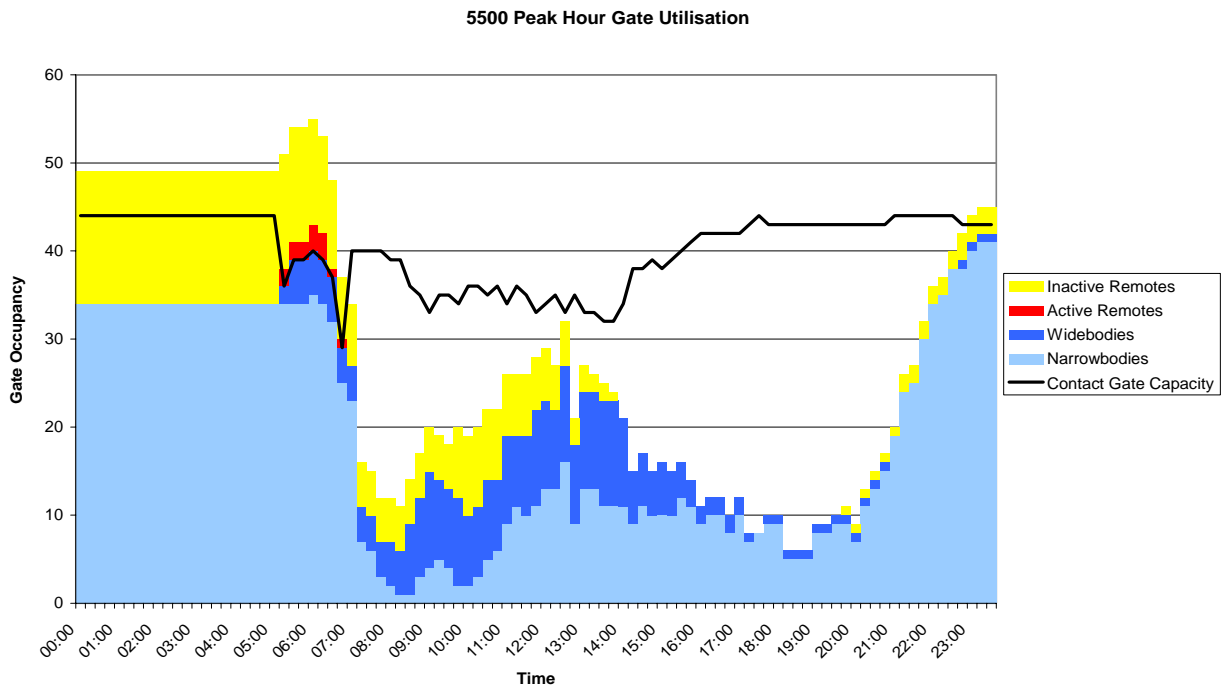


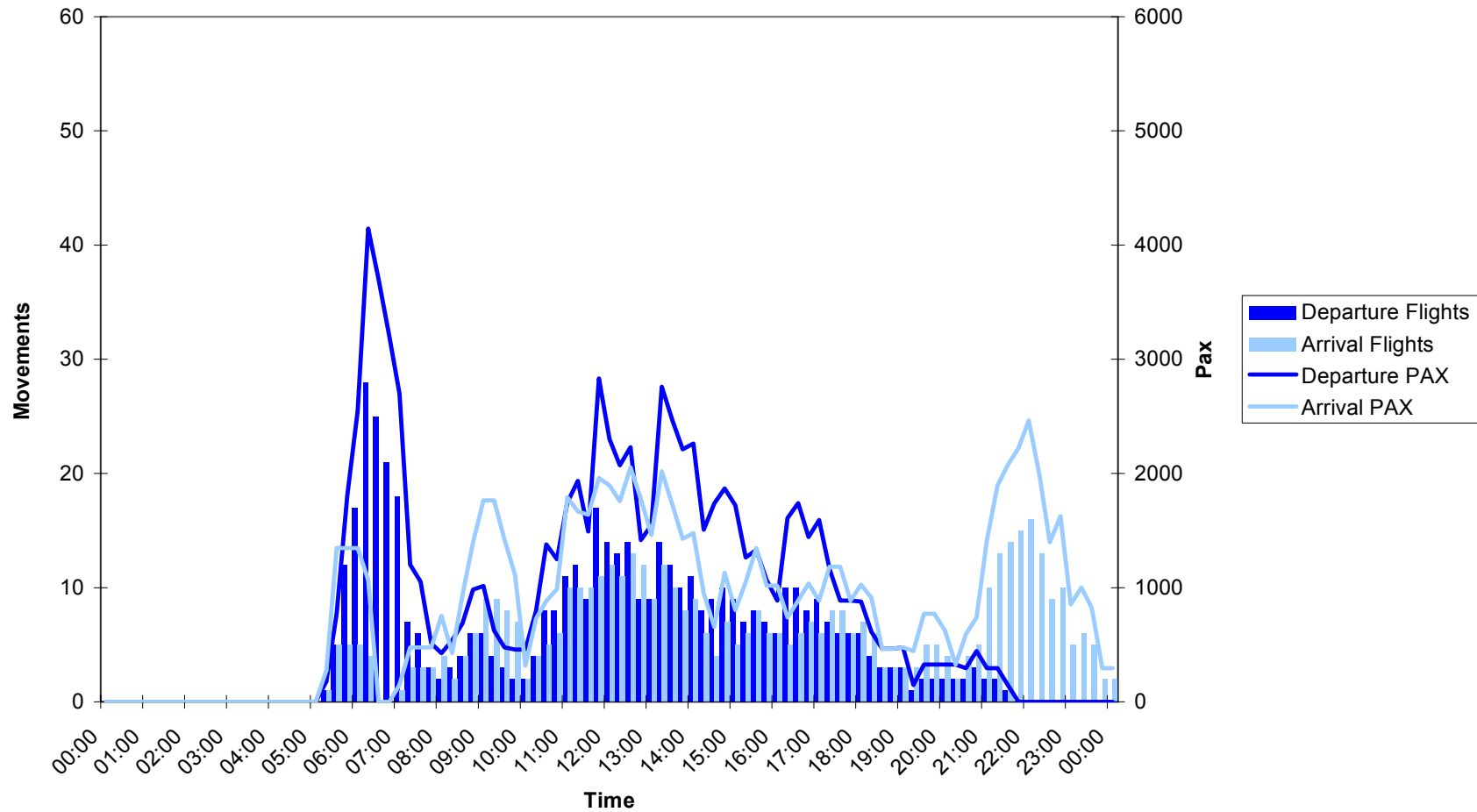
Figure 9.2 Gate Utilisation for the 5,500 Schedule

The supporting 5,500 gating Gantt chart is shown in Appendix C/2. The all sector and EU/Non-EU daily departure and arrival ATM profiles are shown in Appendix A.

Appendix A: Peak Day Arrival and Departure Profiles (Passengers and ATM's)

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base All Sectors Traffic

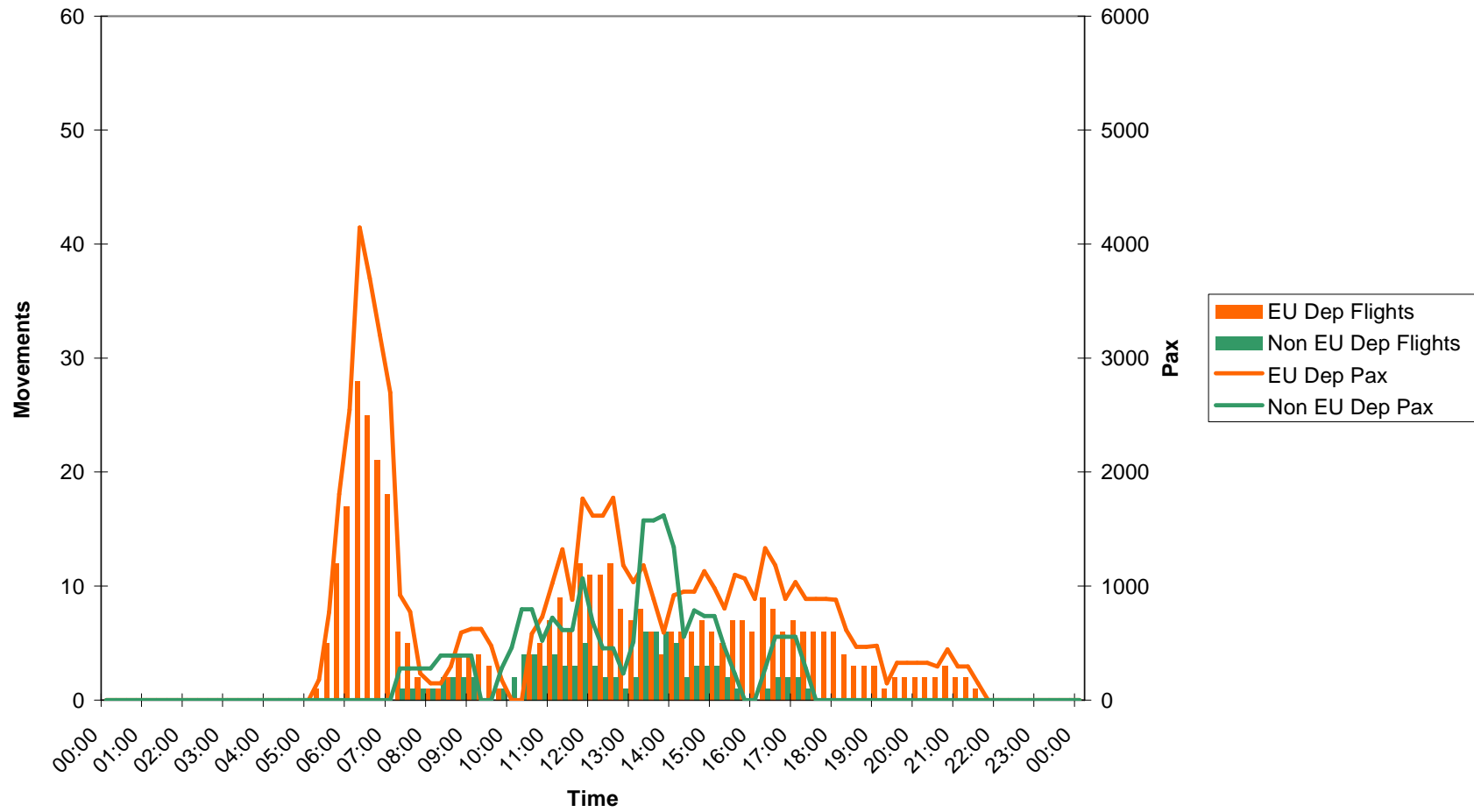
Appendix A/1



4200 Peak Hour (Phase 1) - Base All Sectors Traffic

	Daily	Combined Pk Hr			Arrivals	Arrivals Pk Hr			Departures	Departures Pk Hr		
		From	To	From		To	From	To				
	All Pax	42,015	4,622	06:15	07:15	20,829	2,464	21:01	22:00	21,186	4,144	06:15
All Flights	252	31	06:15	07:15	125	16	21:01	22:00	127	28	06:15	07:14

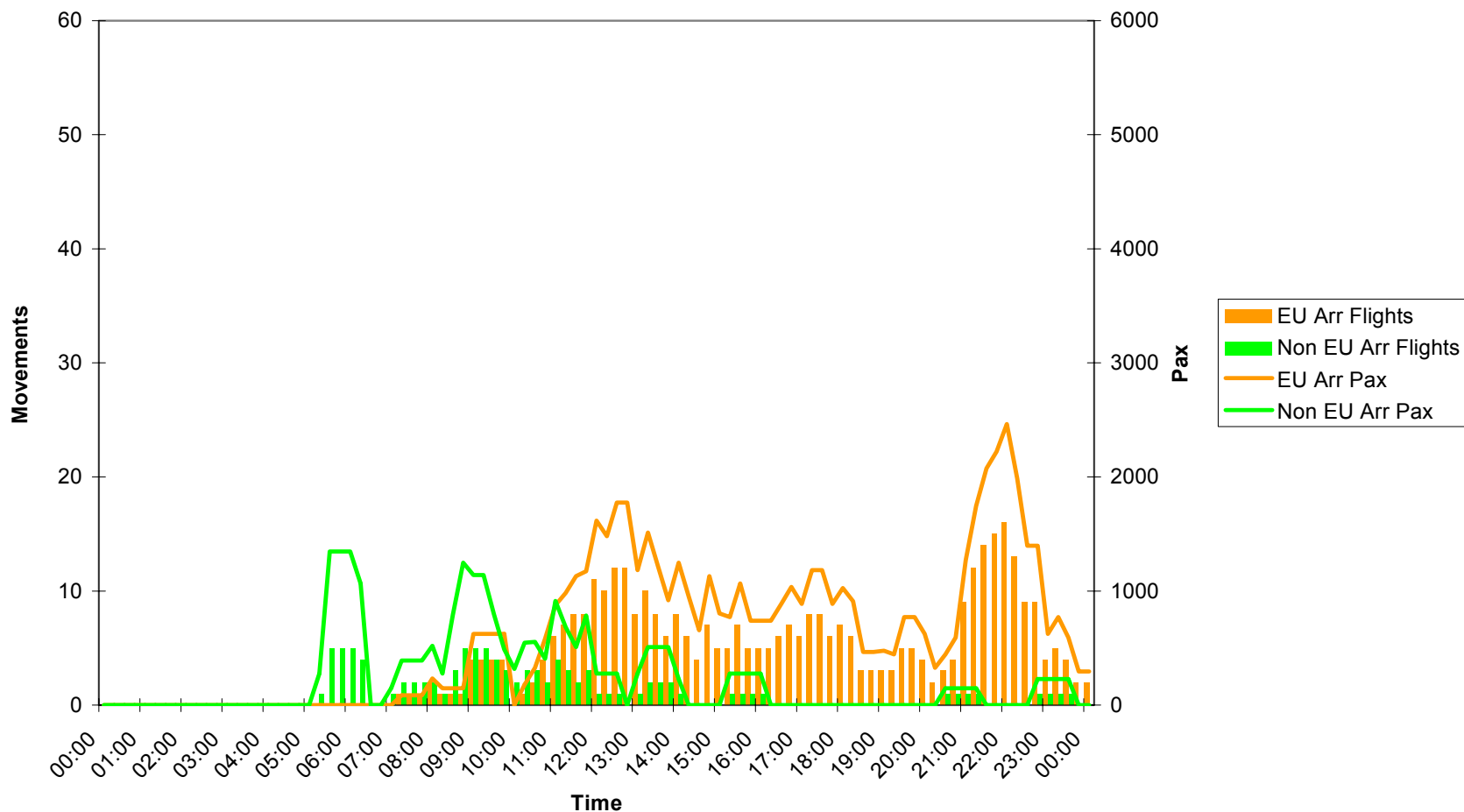
Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base EU & Non-EU Departures Traffic



4200 Peak Hour (Phase 1) - Base EU & Non-EU Departures Traffic

	T2 Departures	Combined Pk Hr			EU Departures	EU Pk Hr			Non-EU Departures	Non-EU Pk Hr		
		From	To			From	To			From	To	
All Pax	21,186	4,144	06:15	07:14	15,504	4,144	06:15	07:14	5,682	1,620	13:45	14:44
All Flights	127	28	06:15	07:14	103	28	06:15	07:14	24	6	13:15	14:14

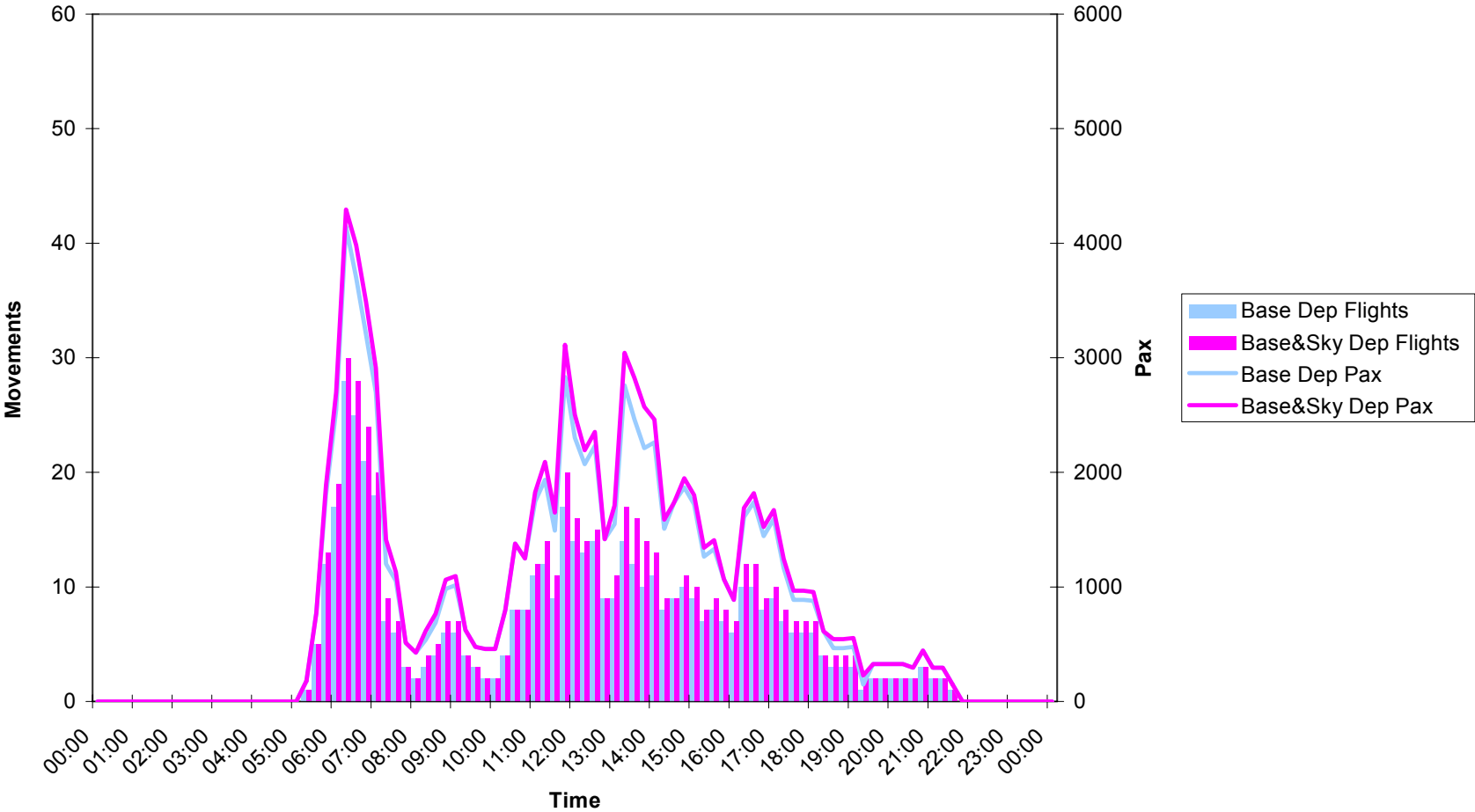
Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base EU & Non-EU Arrivals Traffic



4200 Peak Hour (Phase 1) - Base EU & Non-EU Arrivals Traffic

	T2 Arrivals	Combined Pk Hr			EU Arrivals	EU Pk Hr			Non-EU Arrivals	Non-EU Pk Hr		
		From	To			From	To			From	To	
All Pax	20,829	2,464	21:01	22:00	14,999	2,464	21:01	22:00	5,830	1,346	04:31	05:30
All Flights	125	16	21:01	22:00	100	16	21:01	22:00	25	5	04:31	05:30

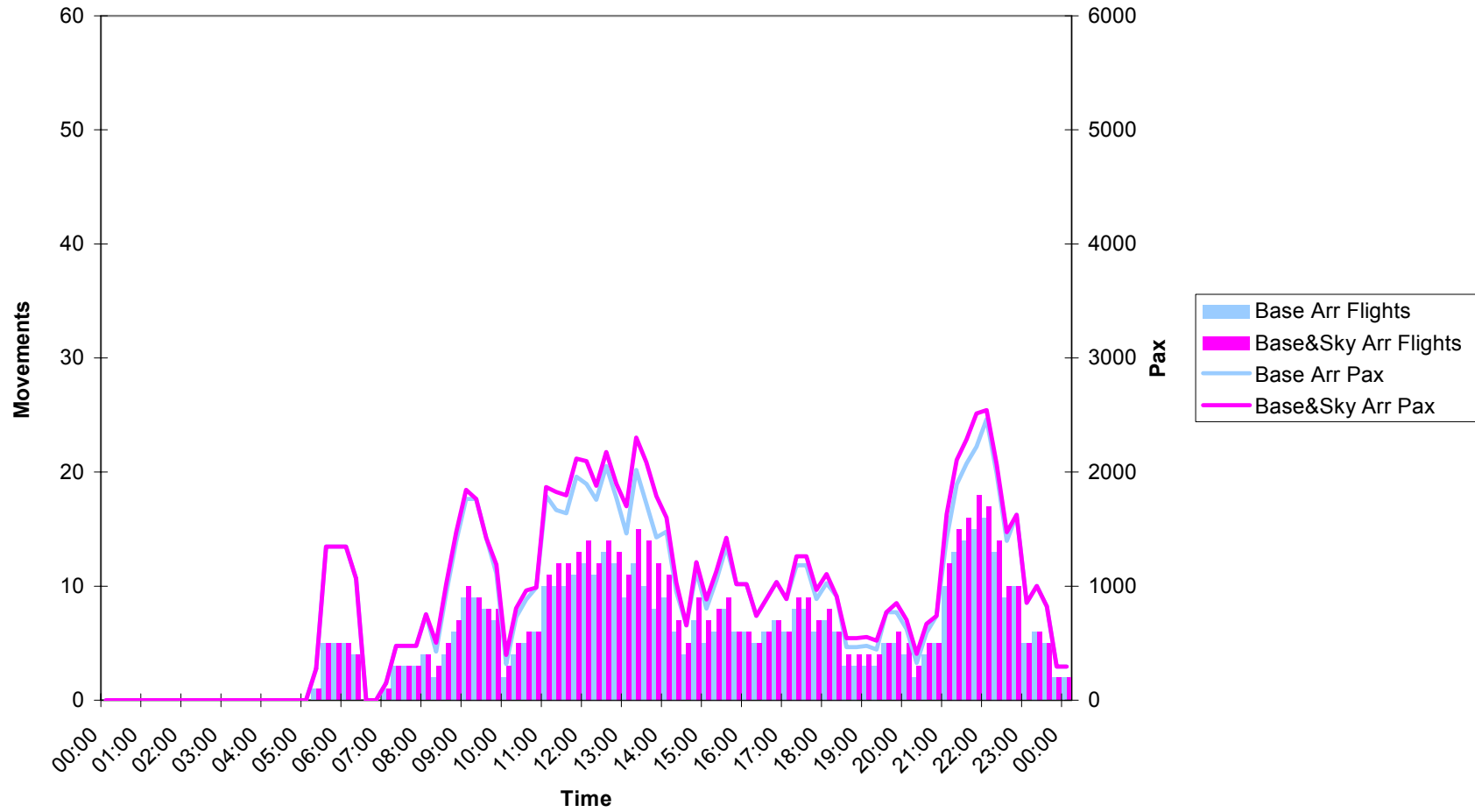
**Terminal 2 Planning Day Profiles
4200 Peak Hour (Phase 1) - Base & SkyTeam Departures Traffic**



4200 Peak Hour (Phase 1) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	44,822	5,011	11:45 12:45	22,236	2,543	21:01 22:00	22,586	4,295	06:15 07:14
All Flights	286	33	06:15 07:15	142	18	20:46 21:45	144	30	06:15 07:14

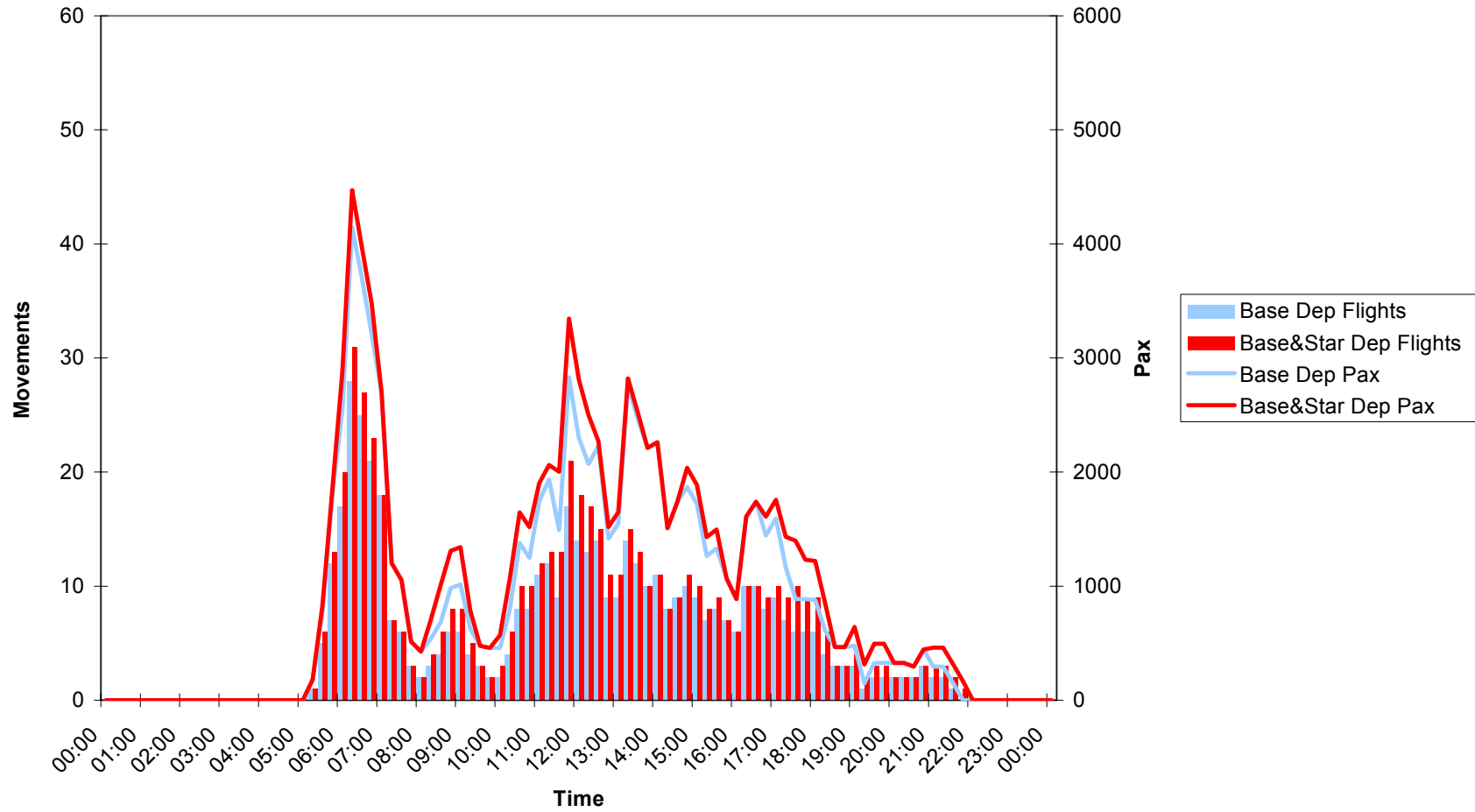
Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & SkyTeam Arrivals Traffic



4200 Peak Hour (Phase 1) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	44,822	5,011	11:45 - 12:45	22,236	2,543	21:01 - 22:00	22,586	4,295	06:15 - 07:14
All Flights	286	33	06:15 - 07:15	142	18	20:46 - 21:45	144	30	06:15 - 07:14

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & Star Alliance Departures Traffic

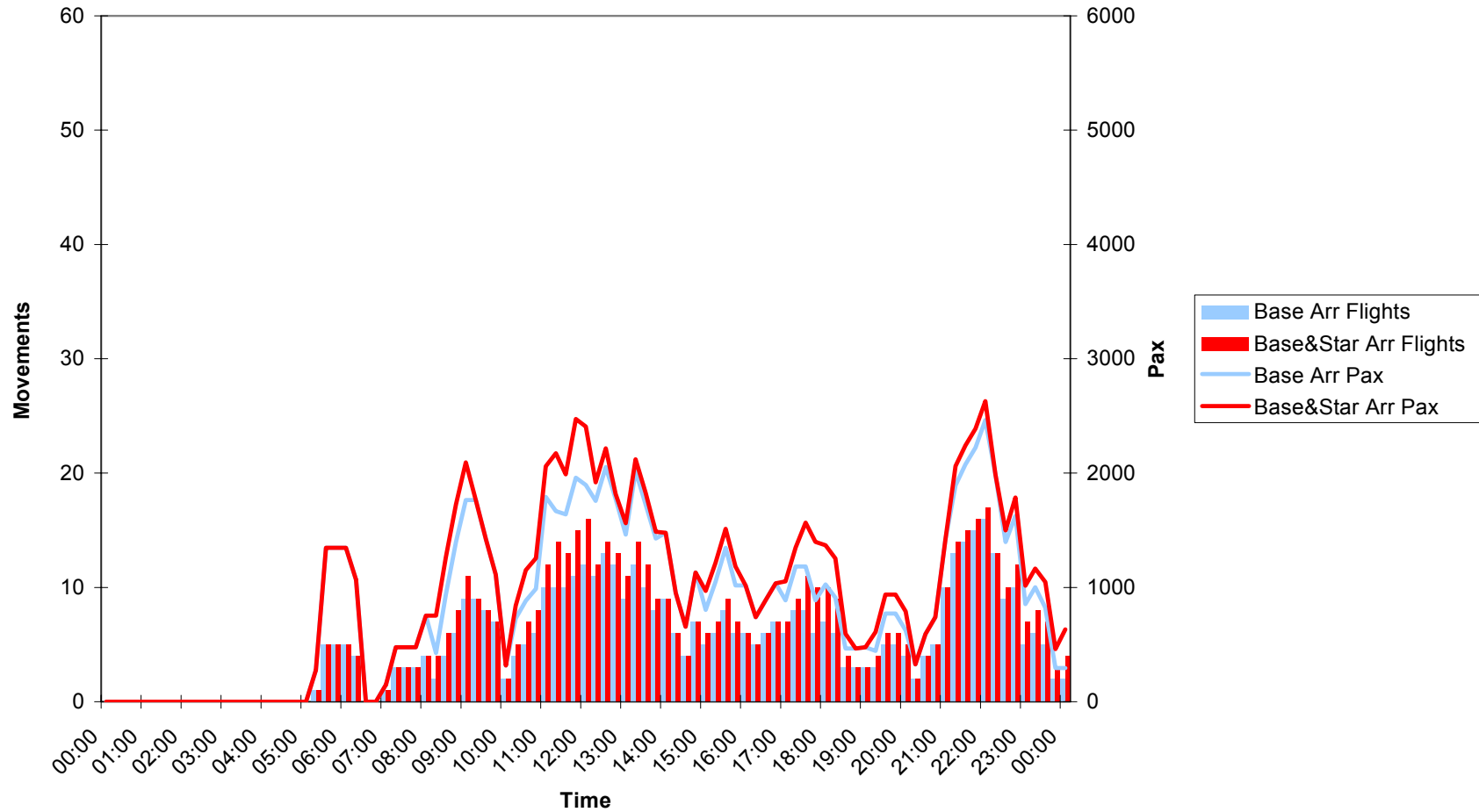


4200 Peak Hour (Phase 1) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	47,276	5,162	11:45 12:45	23,545	2,630	21:01 22:00	23,731	4,472	06:15 07:14
All Flights	293	34	06:15 07:15	146	17	21:01 22:00	147	31	06:15 07:14

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & Star Alliance Arrivals Traffic

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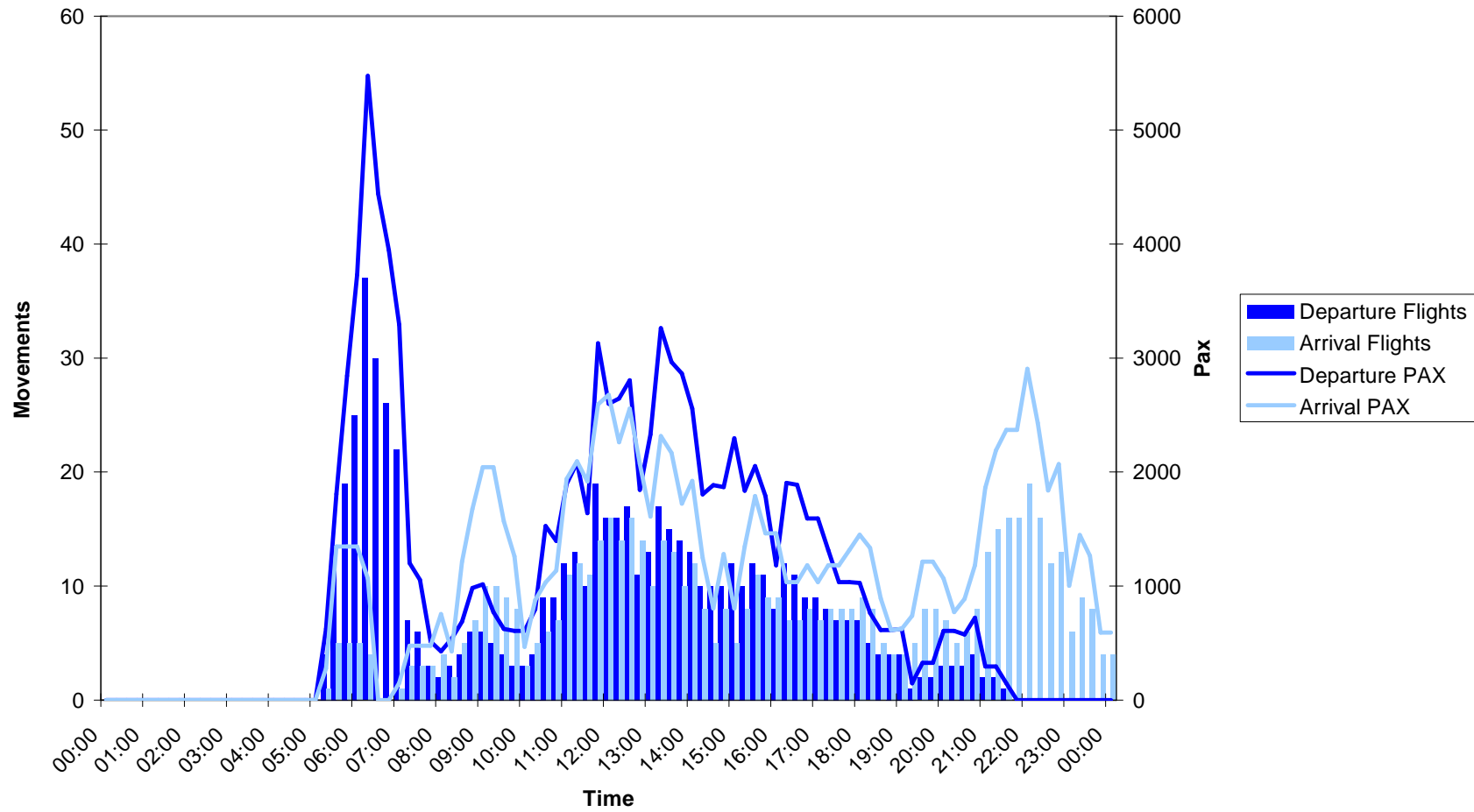


4200 Peak Hour (Phase 1) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr			Departures	Departures Pk Hr	
		From	To		From	To	From		To	
	All Pax	47,276	5,162	11:45 12:45	23,545	2,630	21:01 22:00	23,731	4,472	06:15 07:14
All Flights	293	34	06:15 07:15	146	17	21:01 22:00	147	31	06:15 07:14	

Terminal 2 Planning Day Profiles 5500 Peak Hour (Phase 2) - Base All Sectors Traffic

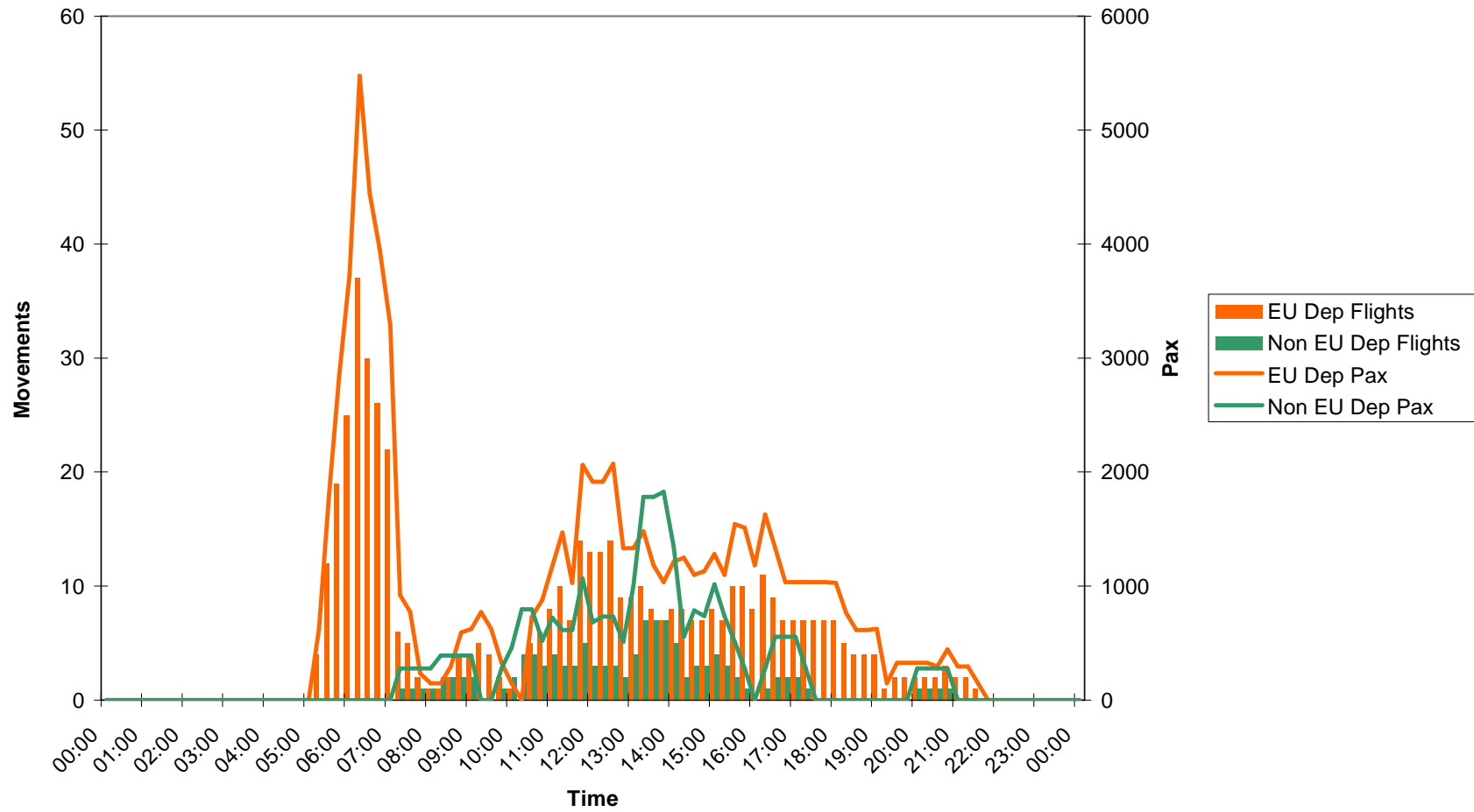
Appendix A/8



5500 Peak Hour (Phase 2) - Base All Sectors Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	51,793	5,954	06:15 07:15	25,718	2,908	21:01 22:00	26,075	5,476	06:15 07:14
All Flights	312	40	06:15 07:15	155	19	21:01 22:00	157	37	06:15 07:14

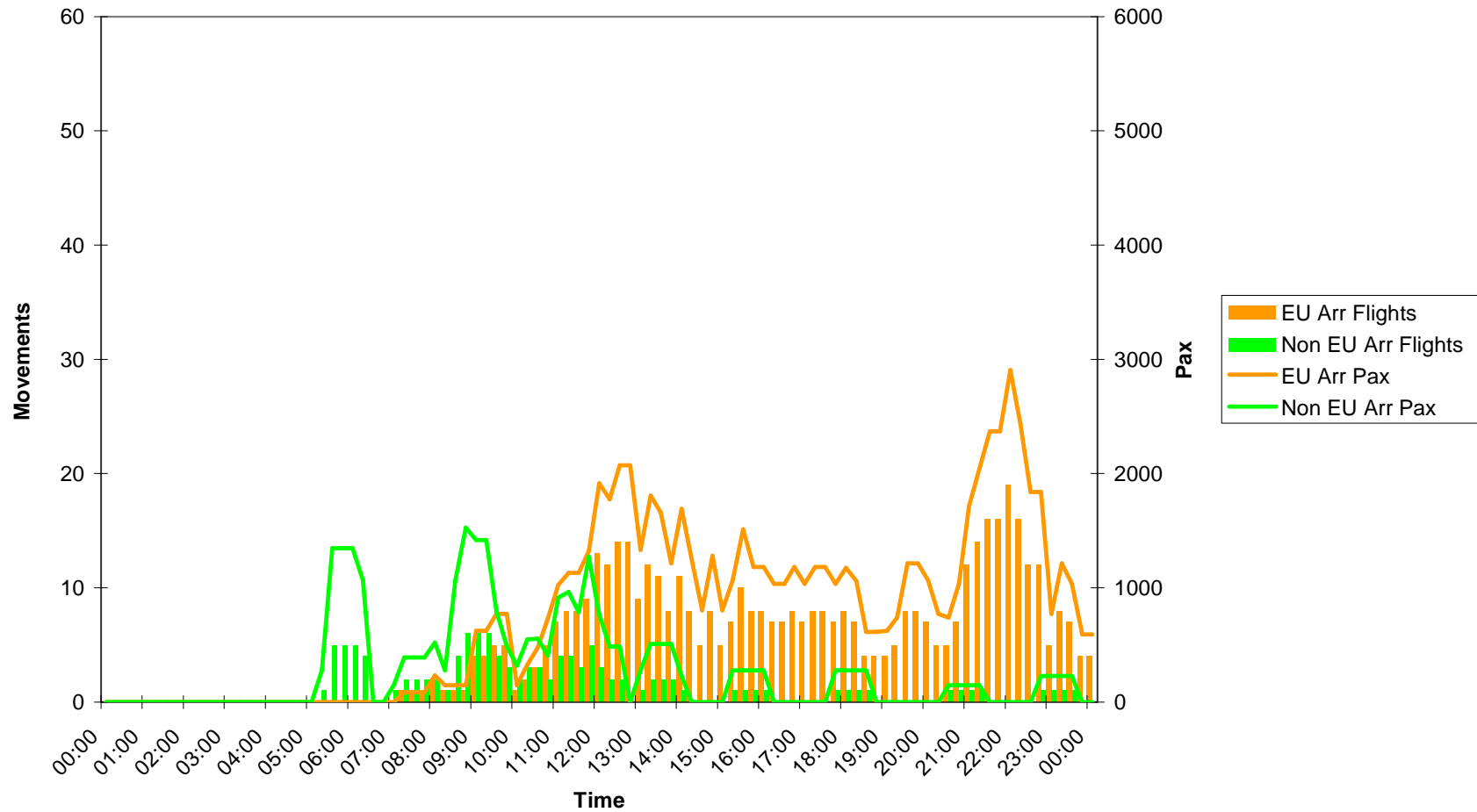
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base EU & Non-EU Departures Traffic**



5500 Peak Hour (Phase 2) - Base EU & Non-EU Departures Traffic

	T2 Departures	Combined Pk Hr			EU Departures	EU Pk Hr			Non-EU Departures	Non-EU Pk Hr		
		From	To			From	To	From		To		
All Pax	26,075	5,476	06:15	07:15	19,352	5,476	06:15	07:14	6,723	1,827	13:45	14:44
All Flights	157	37	06:15	07:15	129	37	06:15	07:14	28	7	13:15	14:14

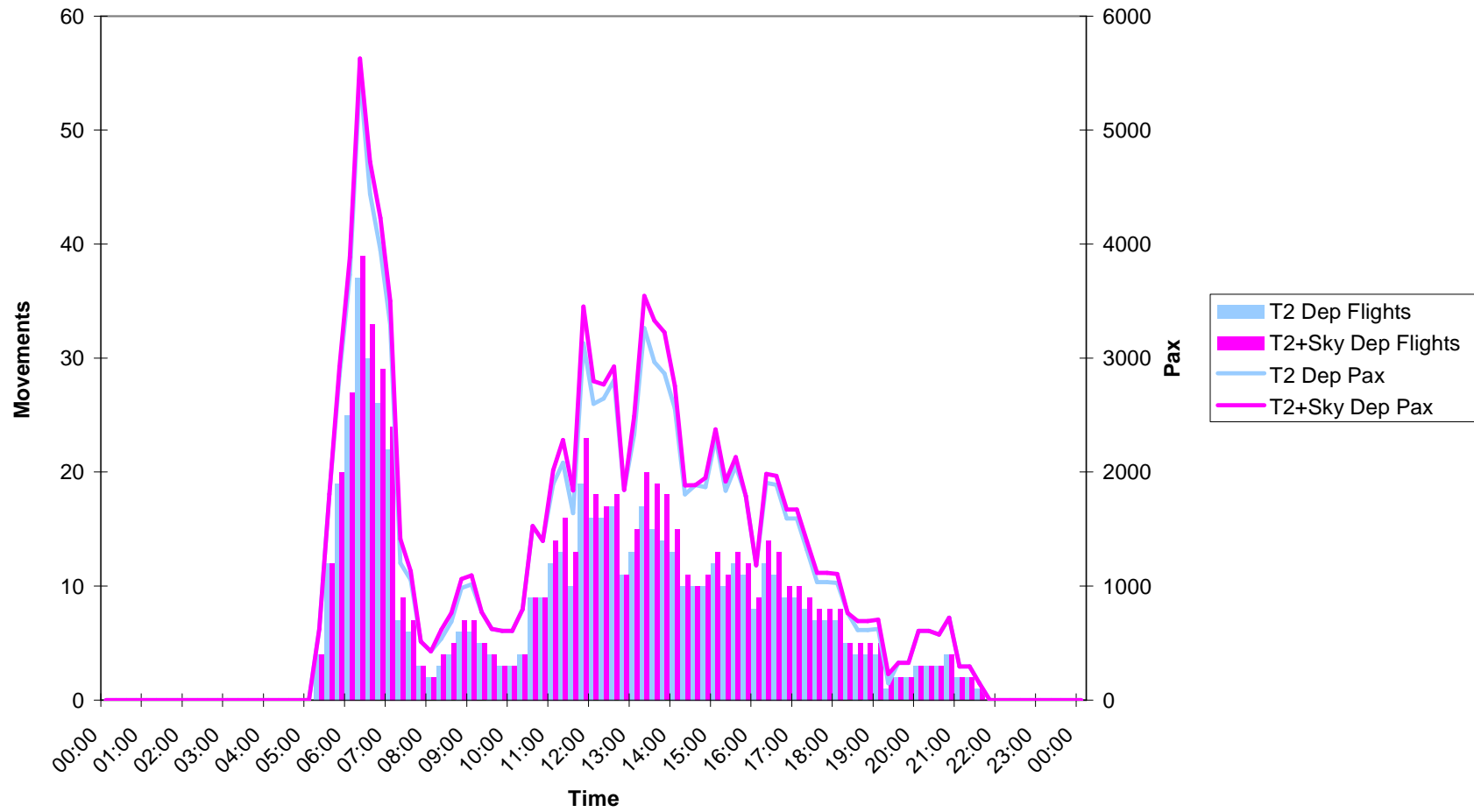
Terminal 2 Planning Day Profiles 5500 Peak Hour (Phase 2) - Base EU & Non-EU Arrivals Traffic



5500 Peak Hour (Phase 2) - Base EU & Non-EU Arrivals Traffic

	T2 Arrivals	Combined Pk Hr		EU Arrivals	EU Pk Hr		Non-EU Arrivals	Non-EU Pk Hr				
		From	To		From	To		From	To			
All Pax	25,718	2,908	21:01	22:01	18,847	2,908	21:01	22:00	6,871	1,527	07:46	08:45
All Flights	155	19	21:01	22:01	126	19	21:01	22:00	29	6	07:46	08:45

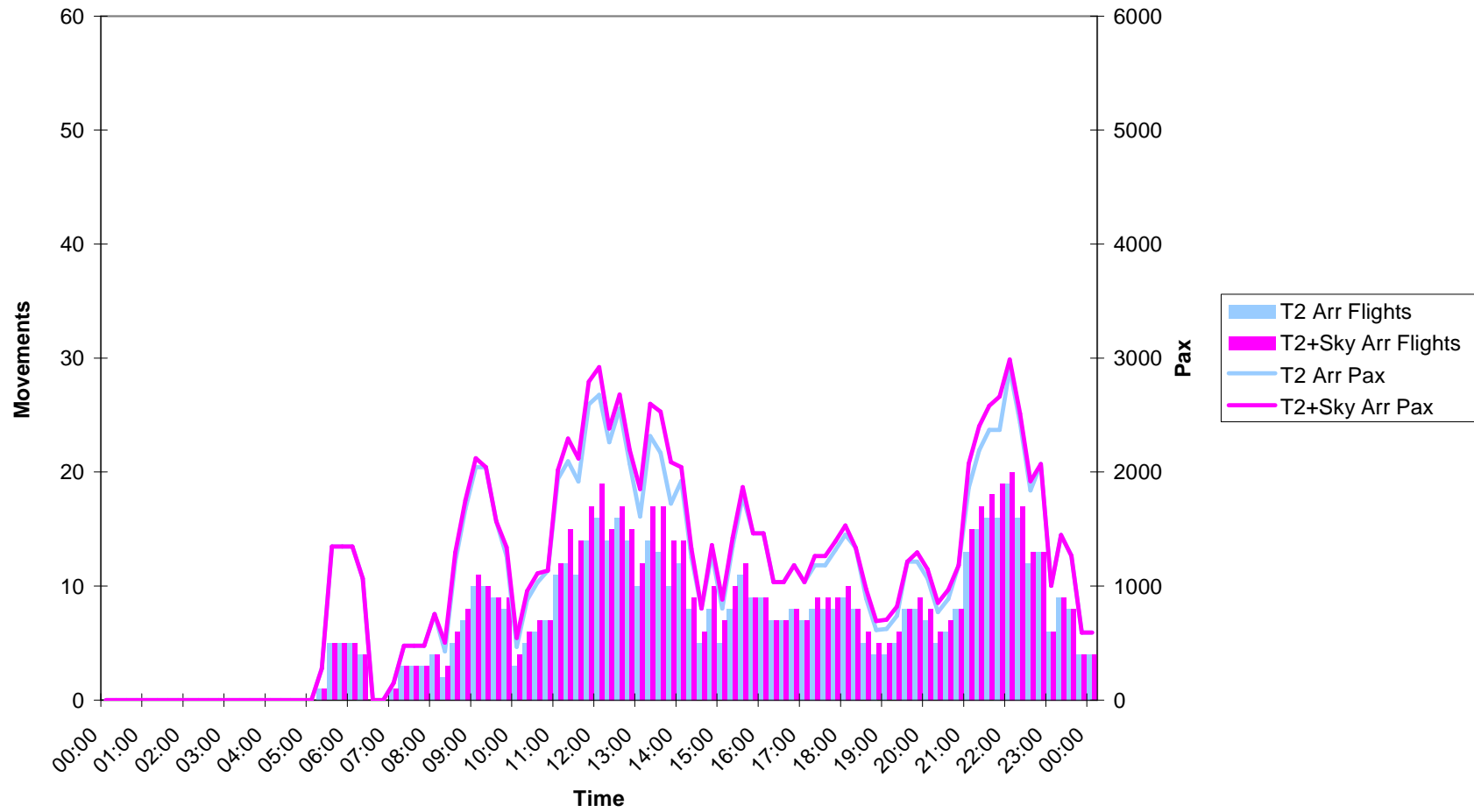
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Departures Traffic**



5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	54,686	6,105	06:15 07:15	27,168	2,987	21:01 22:00	27,518	5,627	06:15 07:14
All Flights	348	42	06:15 07:15	173	20	21:01 22:00	175	39	06:15 07:14

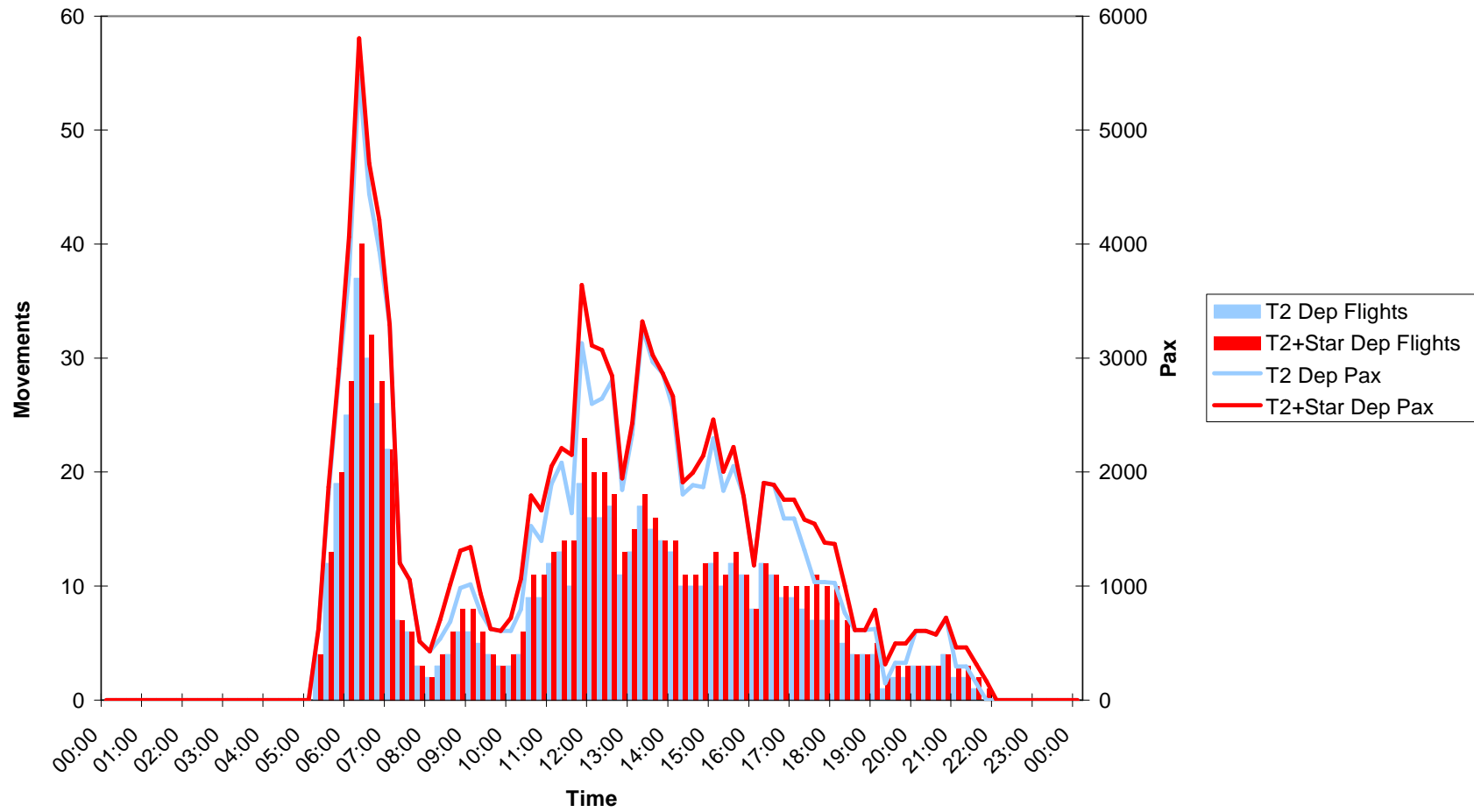
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Arrivals Traffic**



5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	54,686	6,105	06:15 07:15	27,168	2,987	21:01 22:00	27,518	5,627	06:15 07:14
All Flights	348	42	06:15 07:15	173	20	21:01 22:00	175	39	06:15 07:14

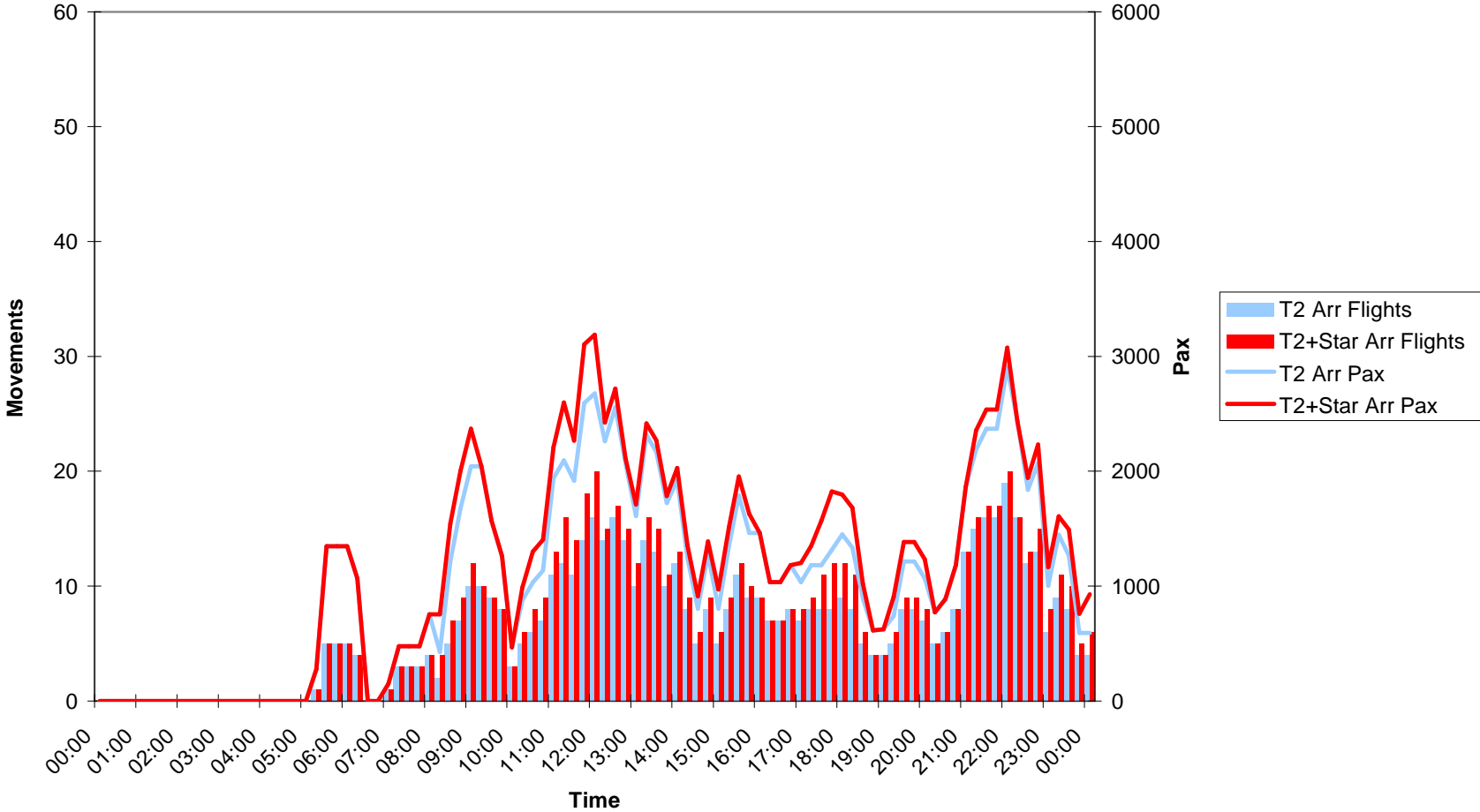
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & Star Alliance Departures Traffic**



5500 Peak Hour (Phase 2) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	57,268	6,282	06:15 07:15	28,541	3,189	11:01 12:00	28,727	5,804	06:15 07:14
All Flights	355	43	06:15 07:15	177	20	11:01 12:00	178	40	06:15 07:14

**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & Star Alliance Arrivals Traffic**



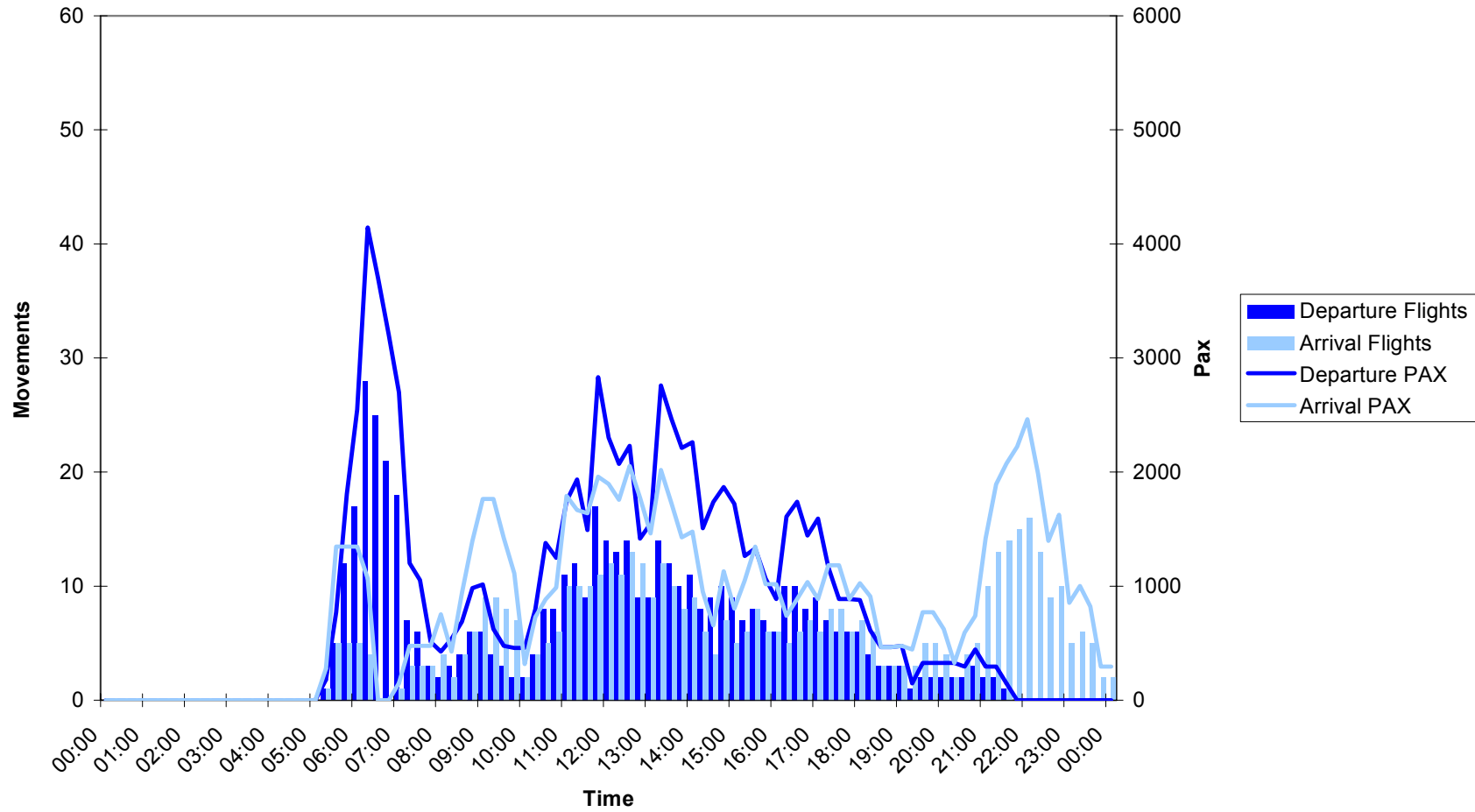
5500 Peak Hour (Phase 2) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
	All Pax	57,268	6,282	06:15 07:15	28,541	3,189	11:01 12:00	28,727	5,804
All Flights	355	43	06:15 07:15	177	20	11:01 12:00	178	40	06:15 07:14

Appendix A: Peak Day Arrival and Departure Profiles (Passengers and ATM's)

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base All Sectors Traffic

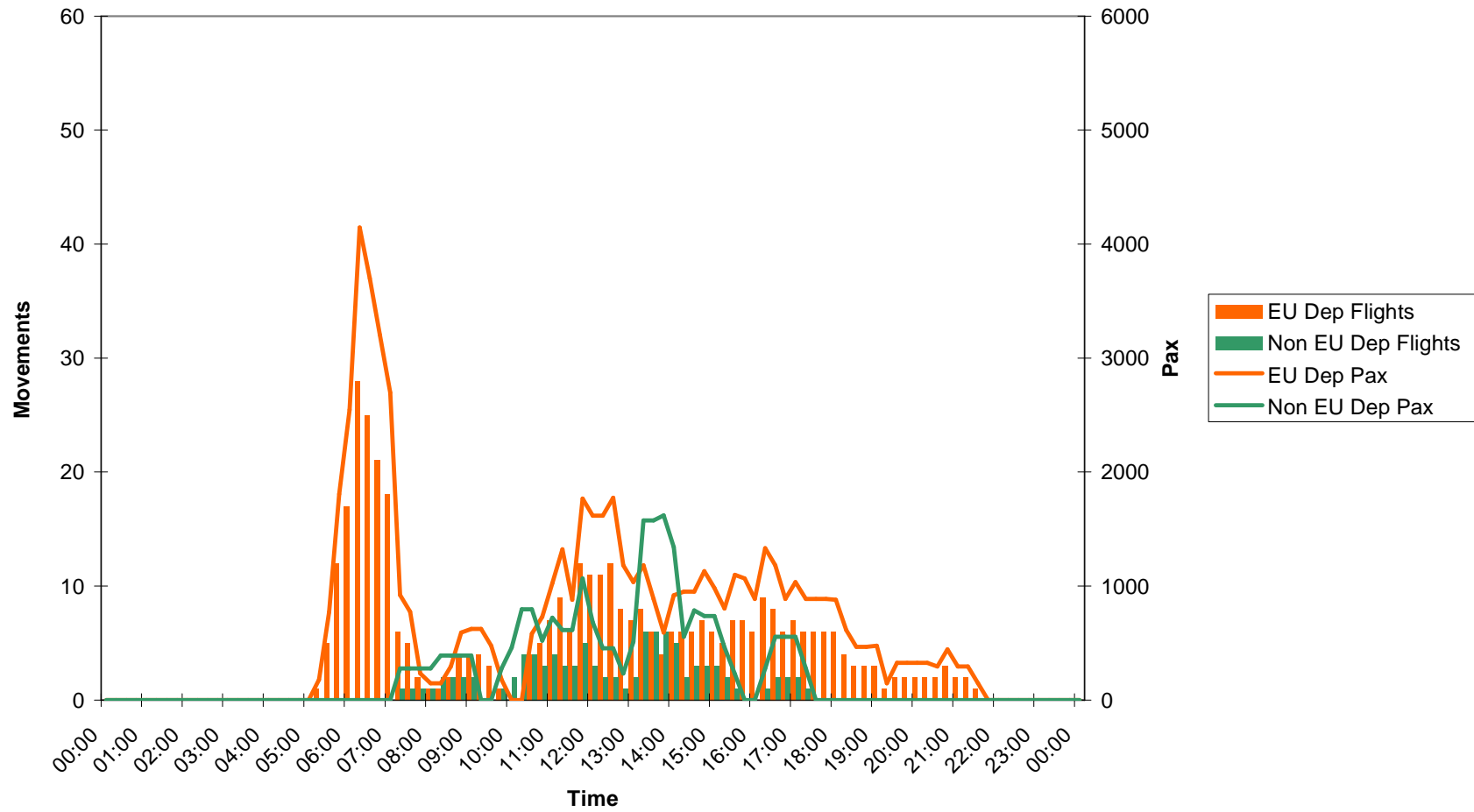
Appendix A/1



4200 Peak Hour (Phase 1) - Base All Sectors Traffic

	Daily	Combined Pk Hr			Arrivals	Arrivals Pk Hr			Departures	Departures Pk Hr		
		From	To	From		To	From	To				
	All Pax	42,015	4,622	06:15	07:15	20,829	2,464	21:01	22:00	21,186	4,144	06:15
All Flights	252	31	06:15	07:15	125	16	21:01	22:00	127	28	06:15	07:14

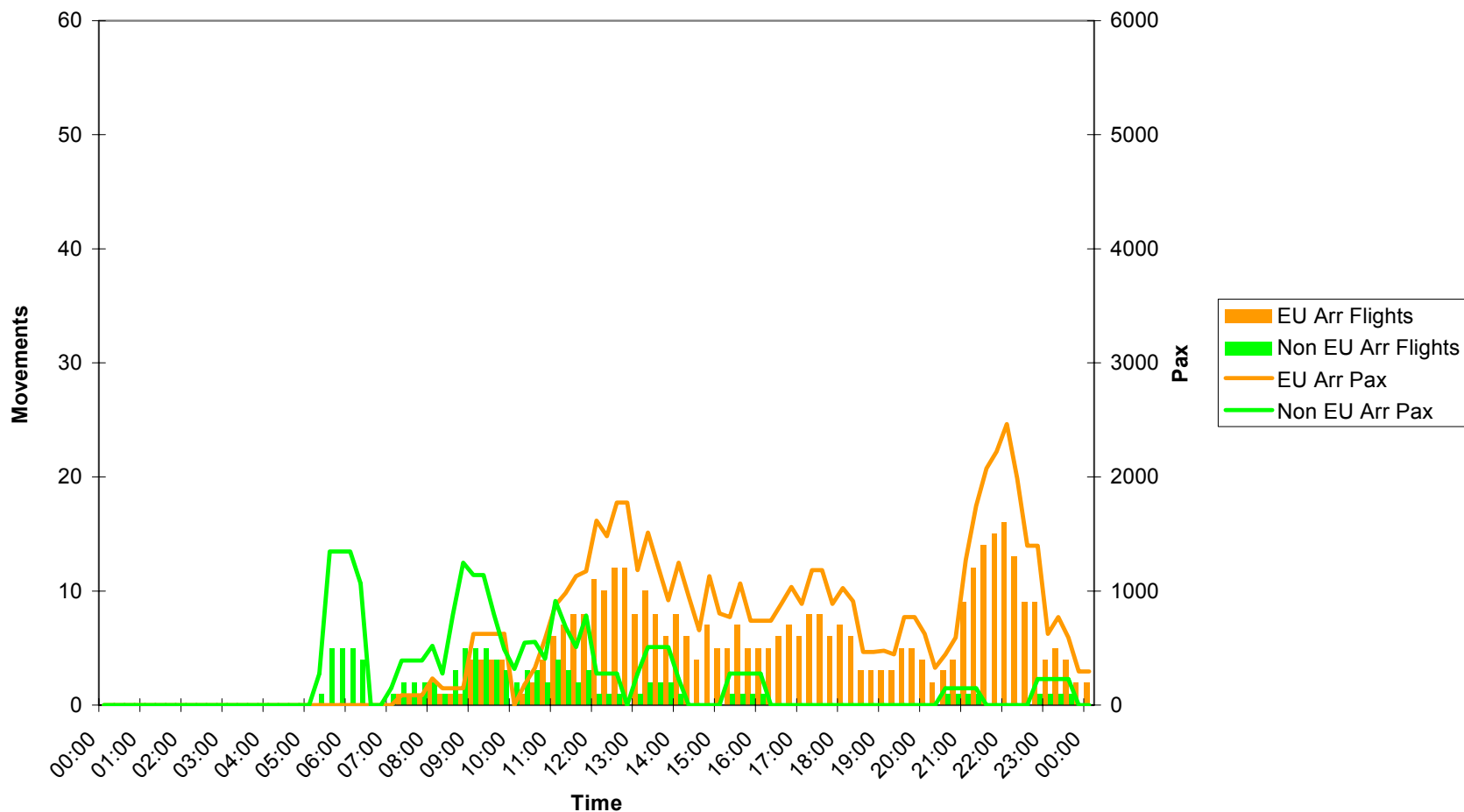
Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base EU & Non-EU Departures Traffic



4200 Peak Hour (Phase 1) - Base EU & Non-EU Departures Traffic

	T2 Departures	Combined Pk Hr			EU Departures	EU Pk Hr			Non-EU Departures	Non-EU Pk Hr		
		From	To			From	To			From	To	
All Pax	21,186	4,144	06:15	07:14	15,504	4,144	06:15	07:14	5,682	1,620	13:45	14:44
All Flights	127	28	06:15	07:14	103	28	06:15	07:14	24	6	13:15	14:14

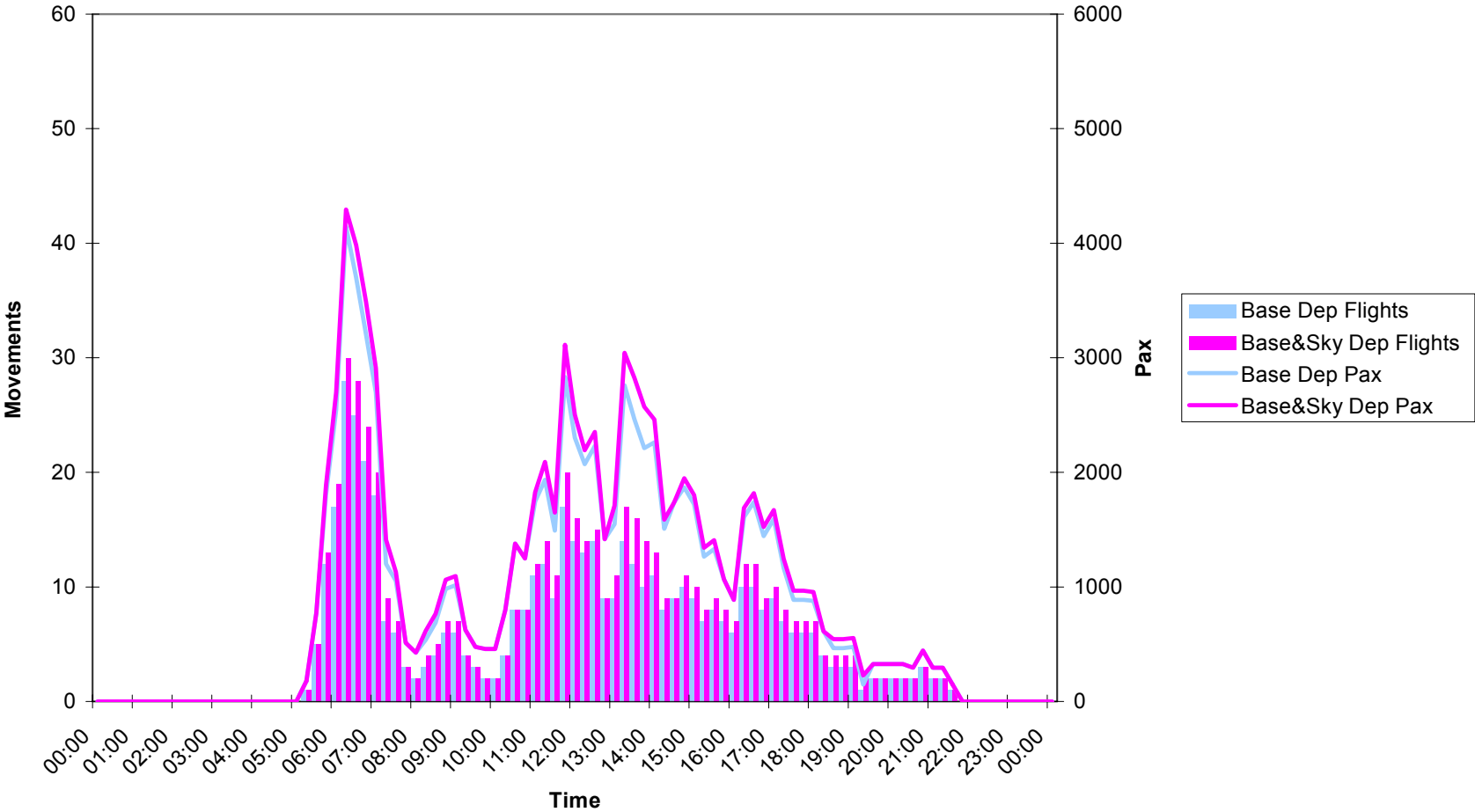
Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base EU & Non-EU Arrivals Traffic



4200 Peak Hour (Phase 1) - Base EU & Non-EU Arrivals Traffic

	T2 Arrivals	Combined Pk Hr			EU Arrivals	EU Pk Hr			Non-EU Arrivals	Non-EU Pk Hr		
		From	To			From	To			From	To	
All Pax	20,829	2,464	21:01	22:00	14,999	2,464	21:01	22:00	5,830	1,346	04:31	05:30
All Flights	125	16	21:01	22:00	100	16	21:01	22:00	25	5	04:31	05:30

**Terminal 2 Planning Day Profiles
4200 Peak Hour (Phase 1) - Base & SkyTeam Departures Traffic**

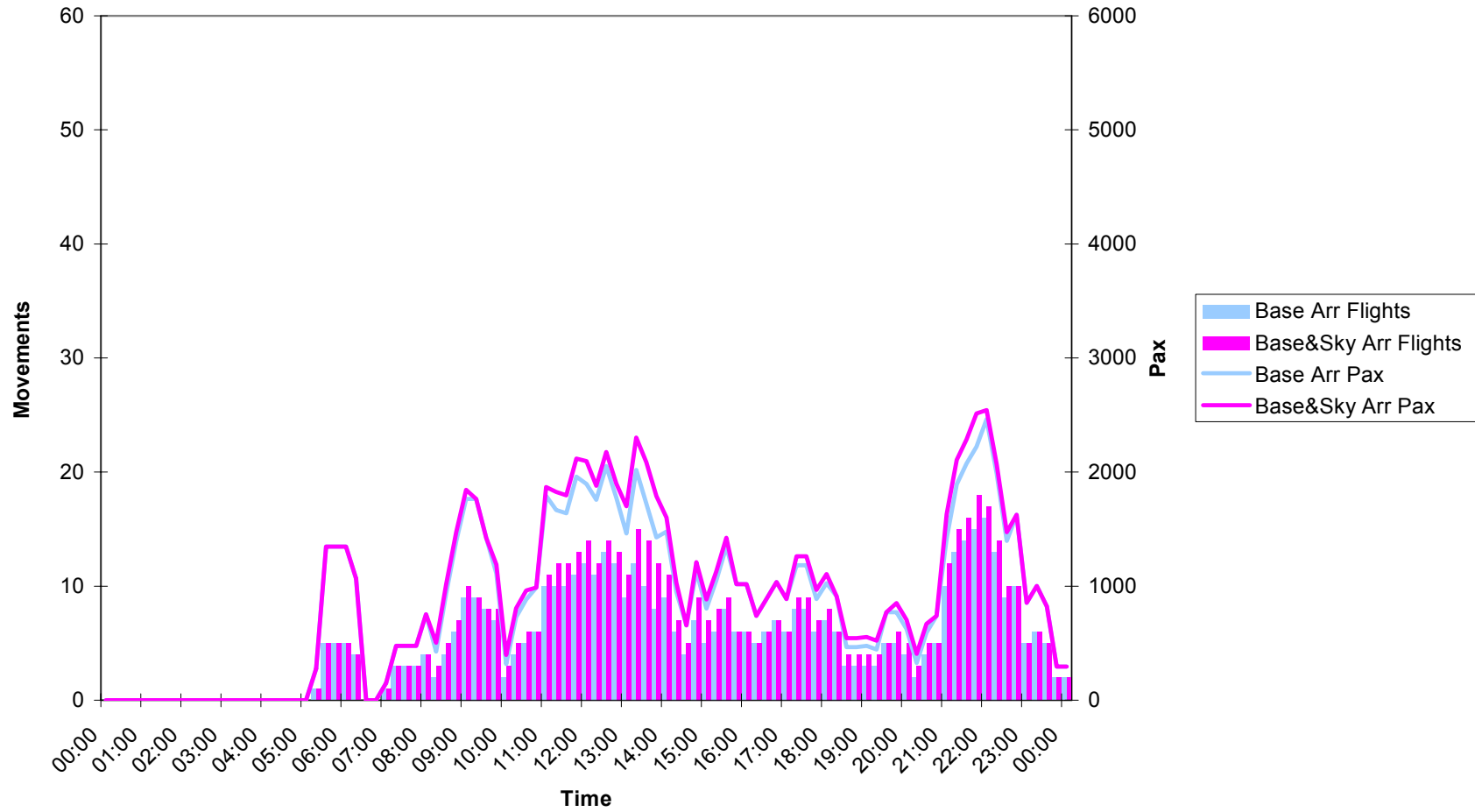


4200 Peak Hour (Phase 1) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	44,822	5,011	11:45 12:45	22,236	2,543	21:01 22:00	22,586	4,295	06:15 07:14
All Flights	286	33	06:15 07:15	142	18	20:46 21:45	144	30	06:15 07:14

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & SkyTeam Arrivals Traffic

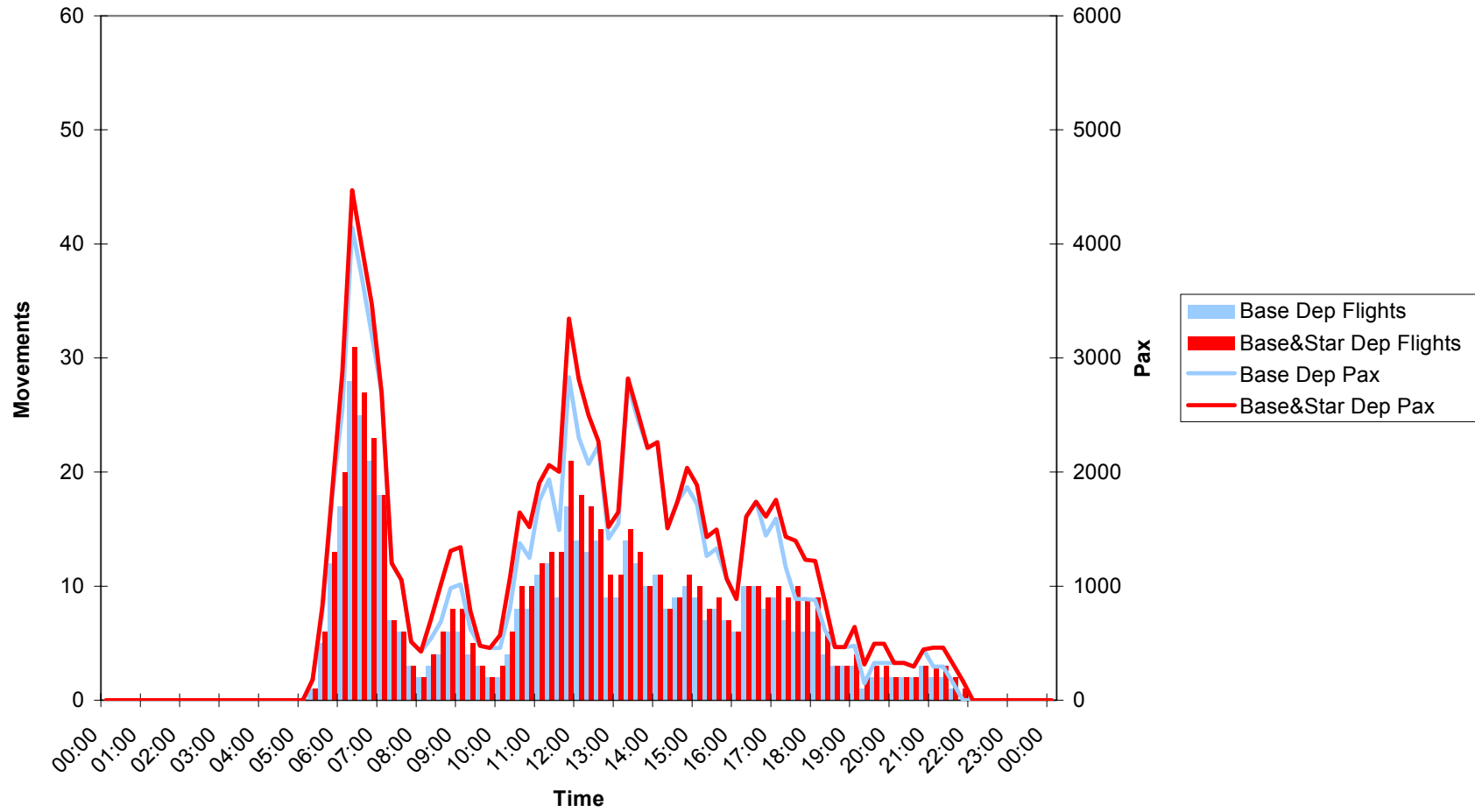
Appendix A/5



4200 Peak Hour (Phase 1) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
	All Pax	44,822	5,011	11:45 - 12:45	22,236	2,543	21:01 - 22:00	22,586	4,295
All Flights	286	33	06:15 - 07:15	142	18	20:46 - 21:45	144	30	06:15 - 07:14

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & Star Alliance Departures Traffic

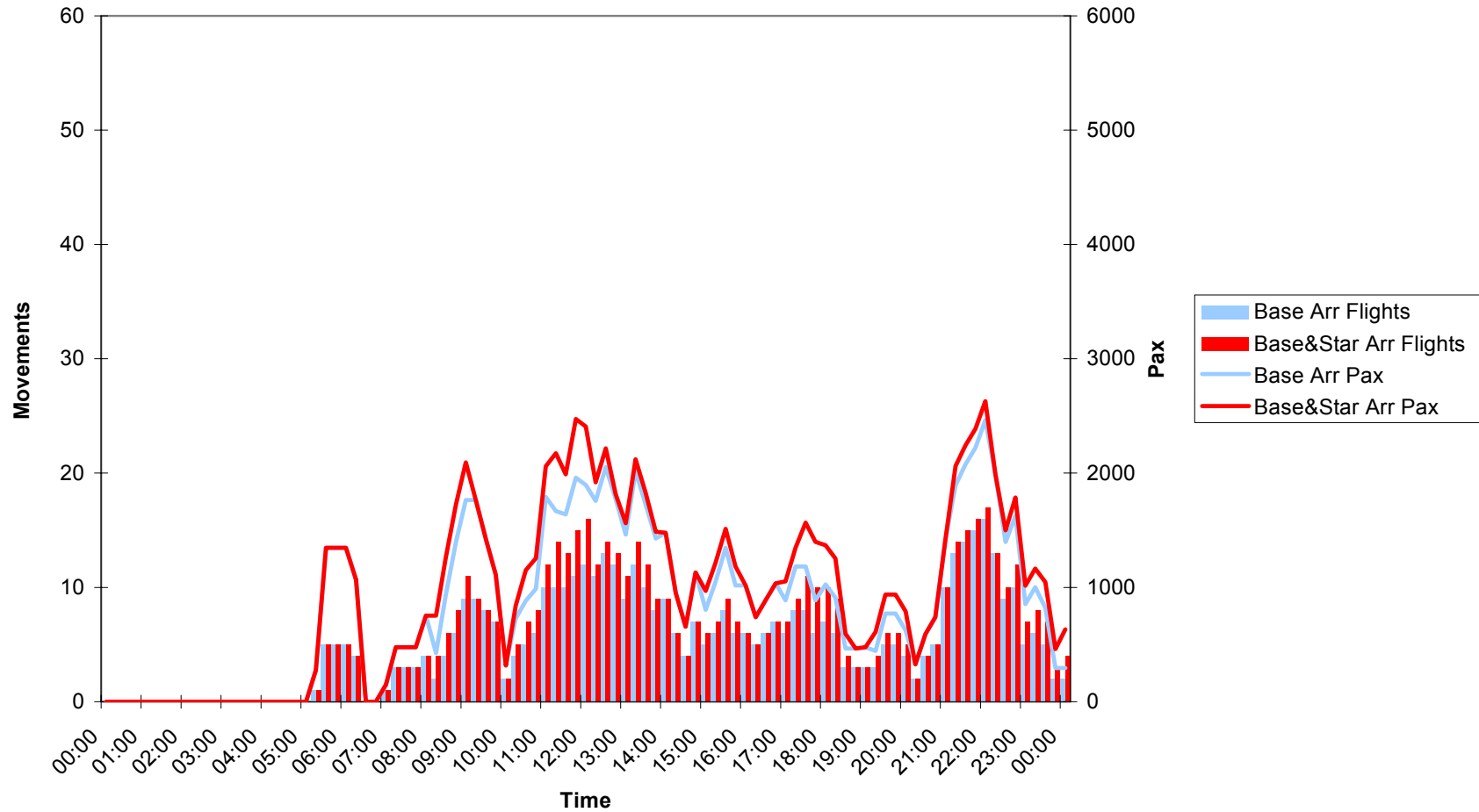


4200 Peak Hour (Phase 1) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	47,276	5,162	11:45 12:45	23,545	2,630	21:01 22:00	23,731	4,472	06:15 07:14
All Flights	293	34	06:15 07:15	146	17	21:01 22:00	147	31	06:15 07:14

Terminal 2 Planning Day Profiles 4200 Peak Hour (Phase 1) - Base & Star Alliance Arrivals Traffic

Appendix A/7

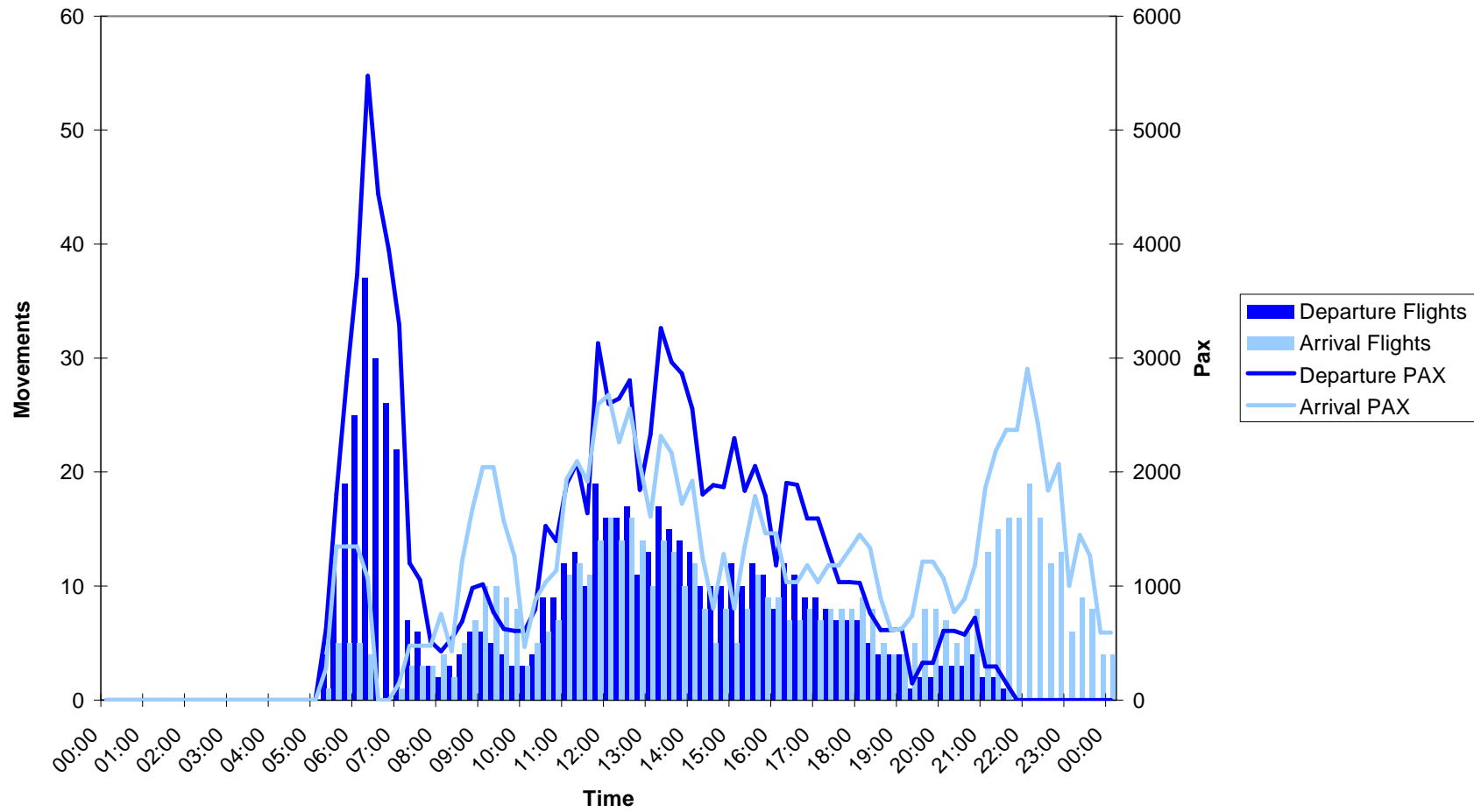


4200 Peak Hour (Phase 1) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	47,276	5,162	11:45 12:45	23,545	2,630	21:01 22:00	23,731	4,472	06:15 07:14
All Flights	293	34	06:15 07:15	146	17	21:01 22:00	147	31	06:15 07:14

Terminal 2 Planning Day Profiles 5500 Peak Hour (Phase 2) - Base All Sectors Traffic

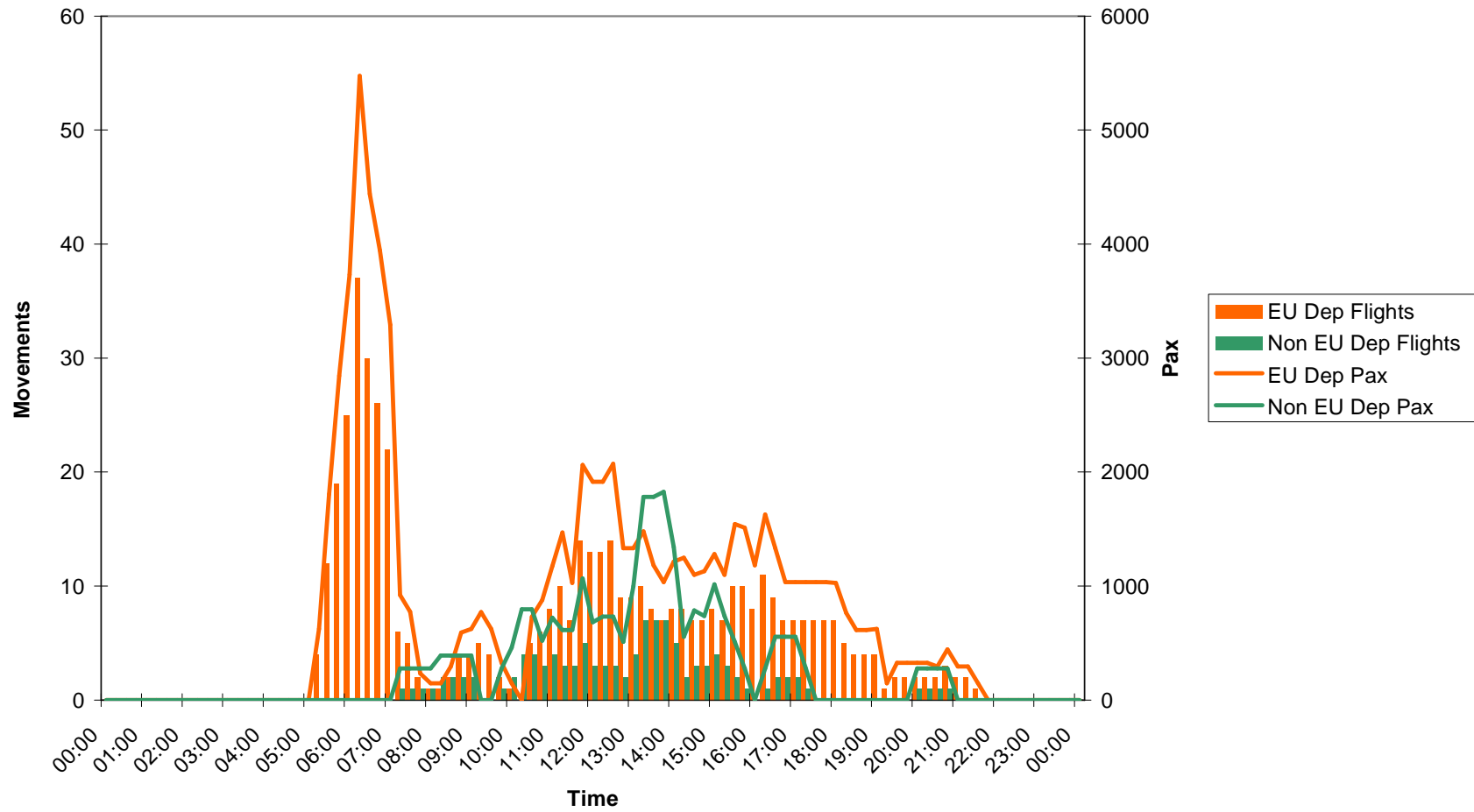
Appendix A/8



5500 Peak Hour (Phase 2) - Base All Sectors Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	51,793	5,954	06:15 07:15	25,718	2,908	21:01 22:00	26,075	5,476	06:15 07:14
All Flights	312	40	06:15 07:15	155	19	21:01 22:00	157	37	06:15 07:14

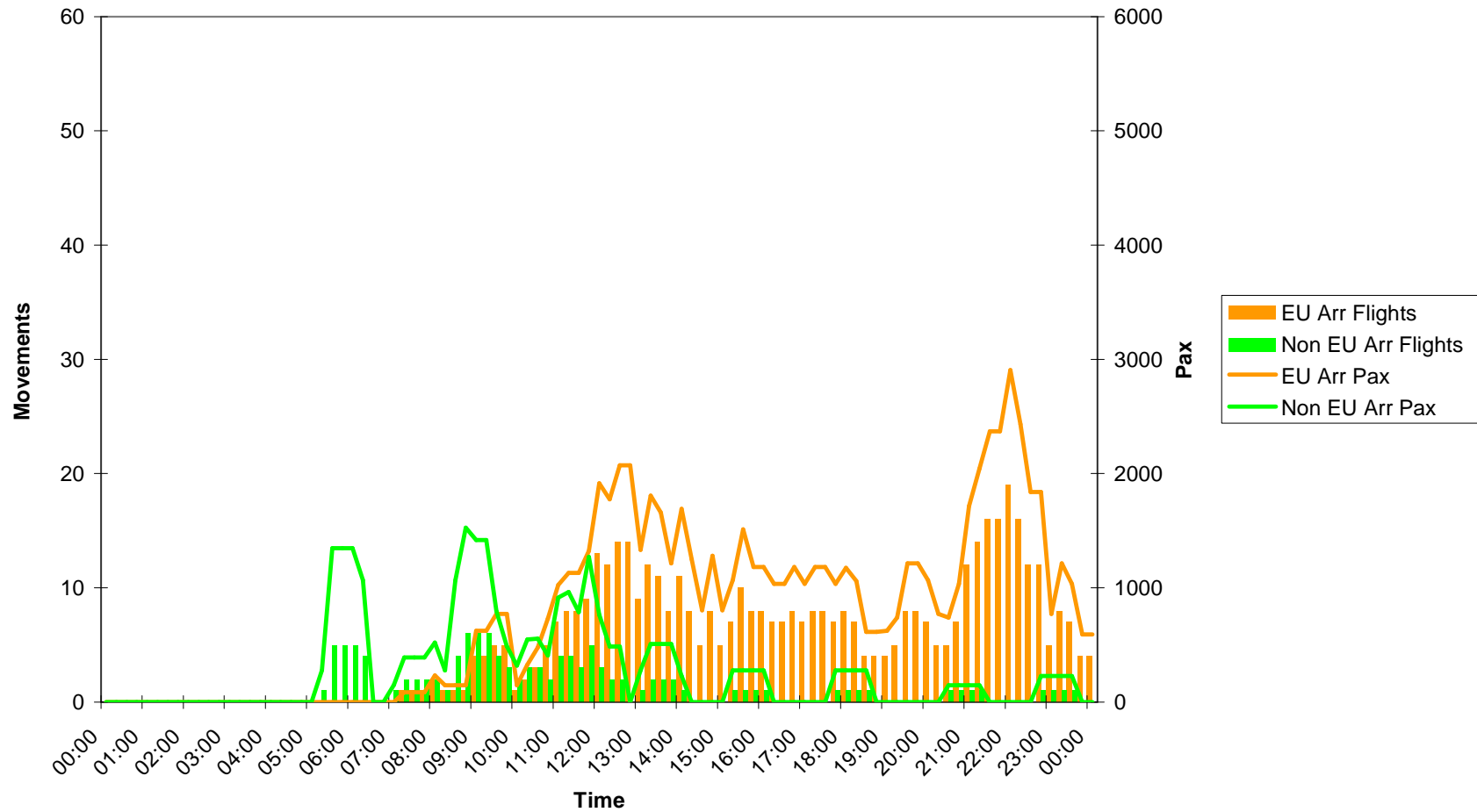
Terminal 2 Planning Day Profiles 5500 Peak Hour (Phase 2) - Base EU & Non-EU Departures Traffic



5500 Peak Hour (Phase 2) - Base EU & Non-EU Departures Traffic

	T2 Departures	Combined Pk Hr			EU Departures	EU Pk Hr			Non-EU Departures	Non-EU Pk Hr		
		From	To			From	To	From		To		
All Pax	26,075	5,476	06:15	07:15	19,352	5,476	06:15	07:14	6,723	1,827	13:45	14:44
All Flights	157	37	06:15	07:15	129	37	06:15	07:14	28	7	13:15	14:14

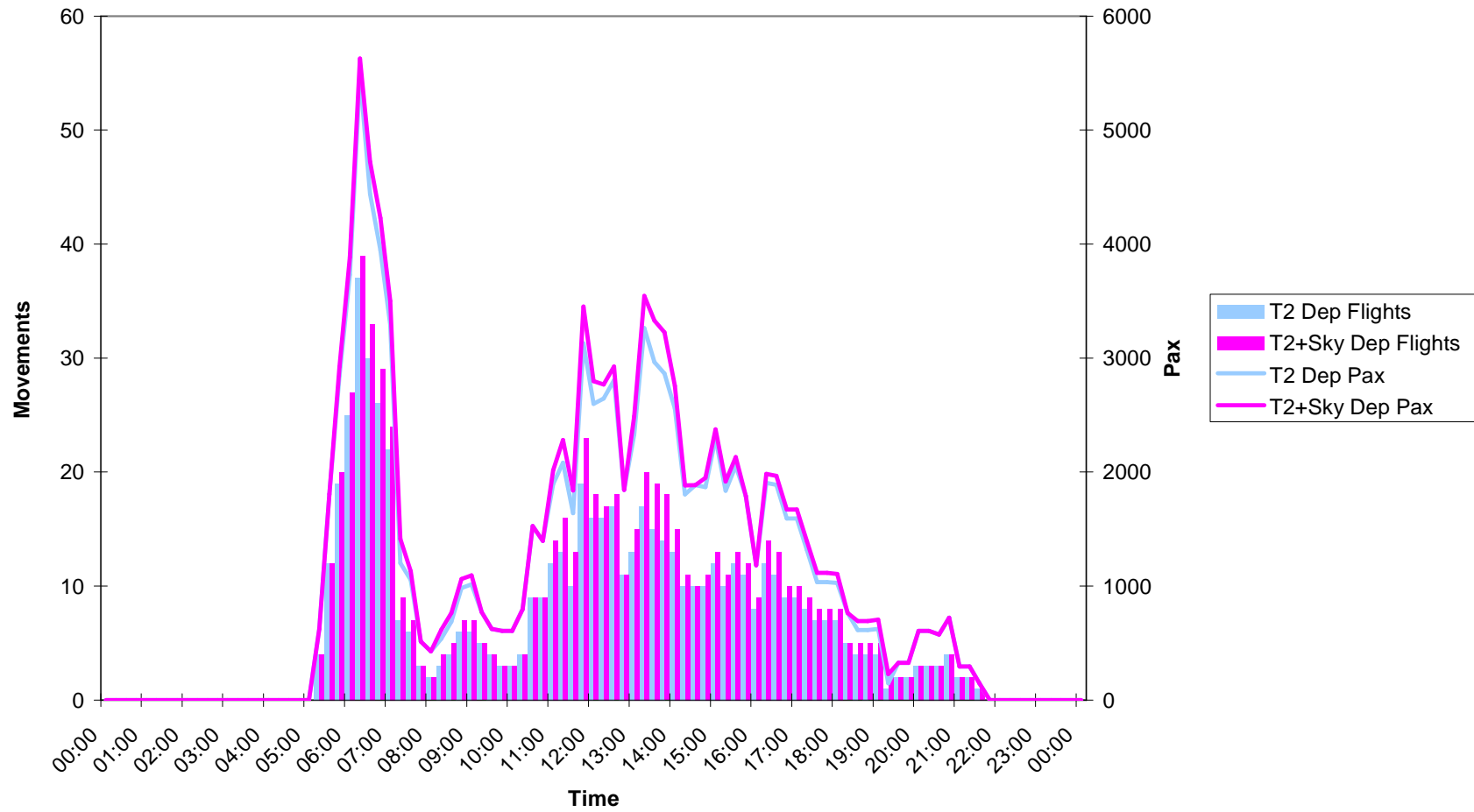
Terminal 2 Planning Day Profiles 5500 Peak Hour (Phase 2) - Base EU & Non-EU Arrivals Traffic



5500 Peak Hour (Phase 2) - Base EU & Non-EU Arrivals Traffic

	T2 Arrivals	Combined Pk Hr		EU Arrivals	EU Pk Hr		Non-EU Arrivals	Non-EU Pk Hr				
		From	To		From	To		From	To			
All Pax	25,718	2,908	21:01	22:01	18,847	2,908	21:01	22:00	6,871	1,527	07:46	08:45
All Flights	155	19	21:01	22:01	126	19	21:01	22:00	29	6	07:46	08:45

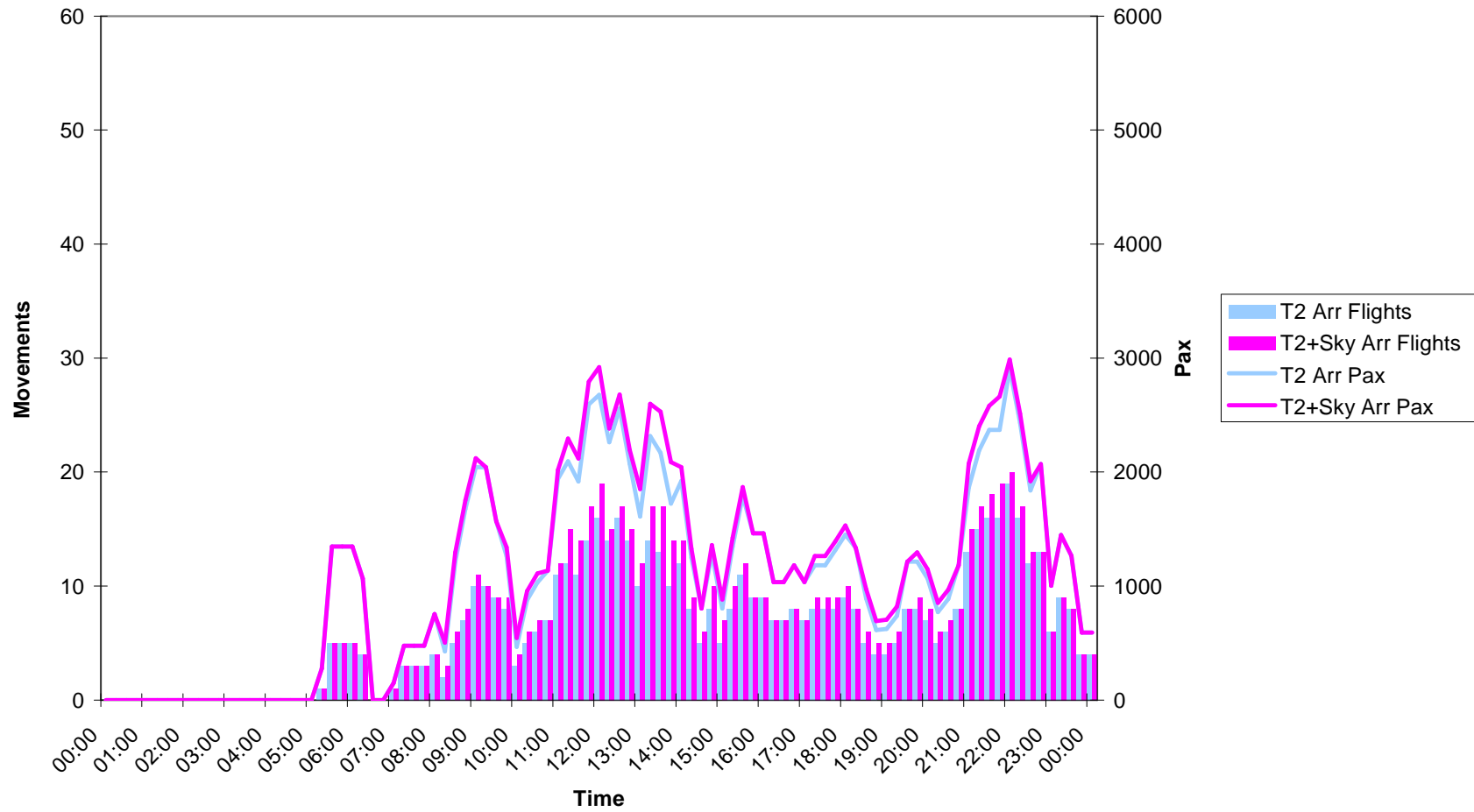
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Departures Traffic**



5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	54,686	6,105	06:15 07:15	27,168	2,987	21:01 22:00	27,518	5,627	06:15 07:14
All Flights	348	42	06:15 07:15	173	20	21:01 22:00	175	39	06:15 07:14

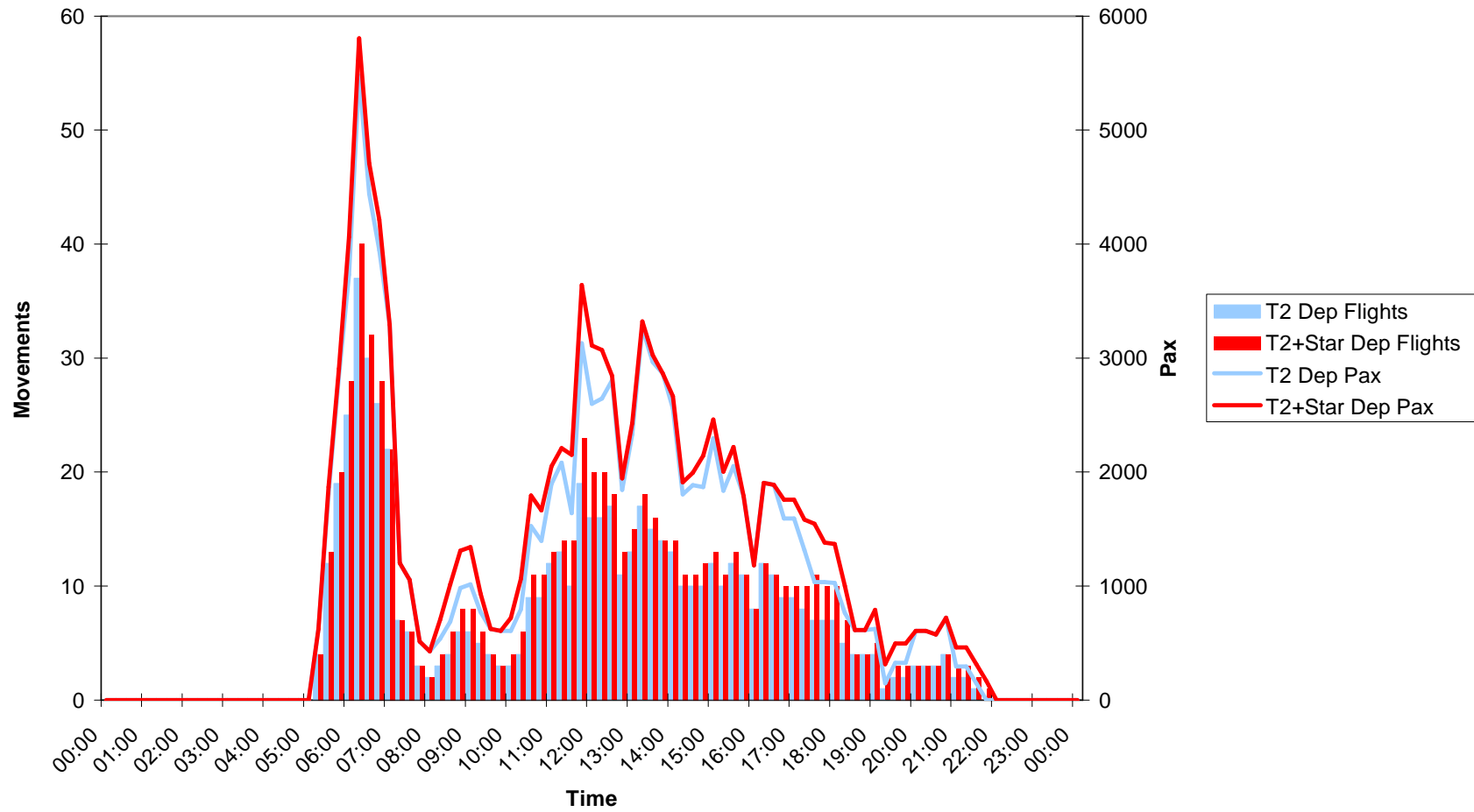
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Arrivals Traffic**



5500 Peak Hour (Phase 2) - Base & SkyTeam Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
All Pax	54,686	6,105	06:15 07:15	27,168	2,987	21:01 22:00	27,518	5,627	06:15 07:14
All Flights	348	42	06:15 07:15	173	20	21:01 22:00	175	39	06:15 07:14

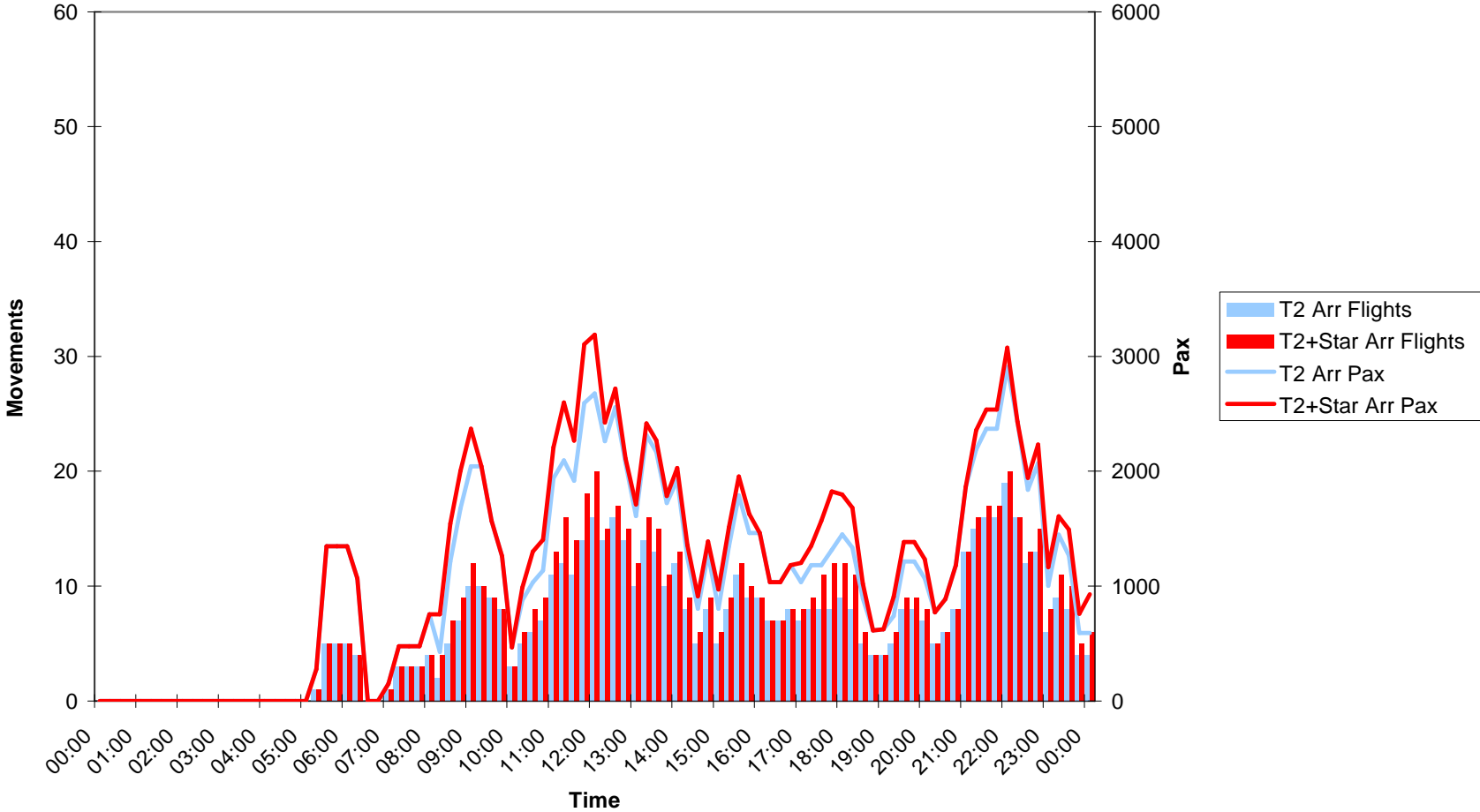
**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & Star Alliance Departures Traffic**



5500 Peak Hour (Phase 2) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
	All Pax	57,268	6,282	06:15 07:15	28,541	3,189	11:01 12:00	28,727	5,804
All Flights	355	43	06:15 07:15	177	20	11:01 12:00	178	40	06:15 07:14

**Terminal 2 Planning Day Profiles
5500 Peak Hour (Phase 2) - Base & Star Alliance Arrivals Traffic**



5500 Peak Hour (Phase 2) - Base & Star Alliance Traffic

	Daily	Combined Pk Hr		Arrivals	Arrivals Pk Hr		Departures	Departures Pk Hr	
		From	To		From	To		From	To
	All Pax	57,268	6,282	06:15 07:15	28,541	3,189	11:01 12:00	28,727	5,804
All Flights	355	43	06:15 07:15	177	20	11:01 12:00	178	40	06:15 07:14