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Restructurisation of Some Western Australian Industries

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CASE STUDIES

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INTRODUCTION

In an effort to find out what role immigrants play in the process of microeconomic reform now well under way in Western Australia case studies were undertaken. We concentrated upon organisations which are either major input sectors into other economic sectors by providing an infrastructure conducive to efficient economic production and distribution or are themselves powerful pillars of the Western Australian industry. The institutions chosen which provide infrastructure are Westrail and the Water Authority, the large private enterprise under consideration is Hamersley Iron, a subsidiary of CRA. Westrail is the major supplier of rail services to the Western Australian economy. Rail transport makes up a significant proportion of the costs of some of Western Australia's largest exporting industries. Its efficiency impacts upon the international competitiveness of Western Australian production. The importance of the transport sector is acknowledged by the government policies which are targeted at this sector. The other infrastructural government institution, Water Authority, provides for the water supply and disposal. It shares with

Westrail the responsibility towards the taxpayer for the efficient use of his/her money and greater macroeconomic and welfare concerns as well as environmental protection issues. Hamersley Iron has been chosen because it represents one of the major export industries in Western Australia, iron ore mining and processing. It is also the owner of a private rail line, a selfcontained line from mine to processing facilities and to the port. The rail aspect is getting special attention where work experience with immigrants is concerned.

WESTRAIL

Overview:

General economic policy is directed towards restructuring the economy with particular emphasis on improving efficiency and productivity, to promote the objective of improved living standards of the Australian population. The size of Australia and its dispersed population means that an effective transport system is essential to the performance of the Australian economy. Numerous inefficiencies exist in the rail industry, which give rise to substantial costs elsewhere in the economy. Reform of the railways has therefore become an essential element of the government's effort to increase efficiency in the public sector.The improvement in rail's performance has important flow-on and multiplier effects throughout the economy. The policy instruments are targeted at improving both the productive efficiency and allocative efficiency of Westrail. Productive efficiency is increased by measures which secure a better utilisation of existing resources (both capital and labour), replacement of outdated technology with international best practice techniques and reorganisation of management and workplace structures (also in the line of adopting international best practice). Allocative efficiency is improved by more efficient pricing practices for both rail and

road. The policy of deregulation which Western Australia has embarked upon in the eighties is designed at attaining that objective. This policy represents a major reorientation of strategy versus the past. In the early days railways had been a means to opening up the State and promoting agricultural development. The emergence of road trucks in the twenties started to challenge the railway's transport monopoly. In order to assure the return on investment in railways laws were passed in the late twenties and early thirties to keep most freight on rails. This policy remained unchanged until 1977, when the Southern Western Australian Transport Study ("SWATS") recommended that freight regulations should gradually be removed and that Westrail should be assisted to become more competitive. Since 1980 a range of traffics have been deregulated. The desirability of deregulating the remaining traffics (particular ores and minerals) is currently under consideration (see Road and Rail Transport in Western Australia:Future Directions,1991). The objective is that Westrail devote resources to those services where there is a comparative advantage (also considering externalities like congestions, accidents, depletion of scarce fuel, pollution). The economic cost-benefit analyses make clear that proper account has to be taken of all costs connected with each transport mode.

Detailed arrangements for the commercial orientation of Westrail were developed by a Government Interdepartmental Committee established in 1984. There appear to have been two phases of reform. The first phase was oriented towards a quick increase in labour productivity by closing down inefficient lines of transport, e.g. small package delivery; this had a domino-effect of staff reductions on the line as a consequence. Overstaffing was reduced. The second phase is directed towards longterm productivity growth by introducing new technology (examples include the acquisition of more fuel-efficient locomotives, the lengthening of passing loops to permit longer trains, track upgrading to allow higher axle loads), new

management structures, a change in work organisation and practices, multiskilling of staff, contracting out.
All these measures have an impact upon the work force, the absolute number as well as its structure by sector and skill. To the extent that immigrants tend to be concentrated in certain areas of decreasing relevance in the provision of transport services, their redeployment represents a challenge to Westrail. To focus on the role of immigrants in this process of major restructurization may lead to false conclusions, however.The question of what happens to immigrants turned out to be non-topical. There is no awareness that the status of "not being born in Australia" might affect the process of micro-economic reform. No record is taken of country of origin of staff in the Personnel Information Management System (PIMS), quite consciously in order not to let that aspect enter into decision making processes and thus facilitate discrimination. Ethnicity as such has been commented upon as affecting reform to the extent that the English language proficiency is not given thus hampering up-or reskilling. Before we enter into this discussion, though,a closer look at the general labour adjustment processes seems worthwhile, since they play a crucial role in industry restructuring. A presentation of the mechanism at work facilitates the understanding of the role of immigrants in the past and may pave the way for a reorientation of immigration policy in the future.

Restructuring the workforce:

The reforms concerning Westrail affect all levels of production and thus the whole workforce. The focus of attention has been shifted from an input and process orientation to outcomes, customers, markets. This shift in emphasis is already highlighted in the new management structure slowly taking form. Railways had traditionally been organised along functional lines, e.g. operations, signalling and communications, that means away from markets and customers. Now management is

starting to be organised around business units, where managers (like product managers in private industries) are assuming greater responsibility for the use of resources and outcomes, thus focusing more on performance. This is the basis for increasing the capability for strategic planning, when management structure matches the structure of Westrail's markets and allows thus a more efficient communication with customers. Linked with that is the greater manoeuverability of the business units in performing their tasks, including the possibility of outcontracting certain jobs that can potentially be done more cheaply on the external market or, vice-versa, Westrail offering its sevices to the general public thus potentially increasing the profitability of the productipn unit (e.g. the Midland workshop). Another route is the establishment of joint venture corporations, as has been done very effectively in the case of Total Western Transport and Western Quarries. In an effort to move out of unprofitable short distance, light duty freight (less than carload traffic), which is the general guideline for increasing overall productivity, Westrail entered into a joint venture with the Gascoyne Trading Company (a road transport and forwarding company) to become TWT in 1982. The running of less than carload freight had been unprofitable because it had meant to retain numerous country stations, which was very labour intensive. Another complementary venture came into effect 1985 with Western Quarries, a dolerite and granite quarry, from which Westrail obtains ballast.

In order to obtain productivity increases, which should render Westrail more competitive and financially viable, new technology is being introduced and working practices are being changed. Work practices are subject to a national review framework, the structural efficiency principle of the Australian Industrial Relations Commission. This principle has as an objective to restructure obsolete job classifications, which became obsolete as a consequence of new technology for example, and to establish a new, competency based

classification of jobs, which is oriented towards new technologies in the pursuit of increased efficiency. Large cuts of the workforce were the result of the reorientation of Westrail towards a competitive, profitmaking public enterprise. Redundancies of railway workers had been a rarity in the past, but this has changed in the eighties.The workforce has been almost halved within a decade (from a level of 9300 in 1981 to 5300 in 1991, or -4000,-43%). Part of this reduction can be attributed to deregulation of freight transport, part to changes in technology and work practices. Labour reductions depend upon the extent and kind of capital investment, economies of scale and synergies, changes in the network configuration (e.g. branch line closures). As a consequence of the "restructuring", commercial loss has been reduced and Westrail is making profits in most traffics (except urban passenger rail, the Transperth connection). Westrail's deficit declined as a consequence of cutting costs, the major part of savings resulted from reducing staff. Labour makes up approximately 45% of total rail costs, while materials and capital each account for about 30% .

The commercial approach has had a favourable impact on total factor productivity. Total factor productivity is an index of the ratio of total output quantity to total input quantity. When correcting for the effect of the scale of operations and the composition of output, which of course affect productivity as defined above, a comparison of Westrail's productivity performance with the other four rail systems in Australia shows that Westrail was most successful. It departed from the national trend in 1984 and is now on average by some 25% more profitable than the second in line, Autralian National (see Industry Commission Report,p18) and 50% higher than QR, PTC and SRA. The role of redundancies in productivity improvement should be kept in mind, though. No other railway system in Australia has undertaken staff reductions to the extent Westrail did. Natural attrition alone could not achieve these

reduction levels; it needed to be complemented by some form of redundancy package.
Until now only financial and technical performance indicators have been used in the evaluation of the performance of the restructured Westrail. But how about social issues? The question arises if there is a trade-off between the provision of customer services and improving efficiency, or between micro-economic and macro-economic efficiency and general welfare (including environmental aspects). Maybe a different productivity concept may have to be devised in the case of the workshop for instance; should the workshop provide customer services on the open market, in competition with and on equal footing with private enterprises, in order to become a profitable business unit in its own right, then the traditional productivity measure would have to be modified. More on that in the chapter on the Midland workshop.
The introduction of some of the international best practice technology entailed import of capital stock from abroad, e.g. the B75 Belotti, a new container haulage machine from Italy. Along with real capital human capital had to be imported in order to allow the optimal transfer of technology from abroad to the Australian workforce. This skill transfer did not take place through the traditional Australian approach, immigration , but much rather through the option of short-term foreign worker contracts. There might be more scope for this kind of skill transfer as international best practice techniques become more universally applied.

What groups were most affected by restructuring, or much rather by redundancies, since the second stage of reskilling and redeployment of workers has not yet commenced at Westrail. To begin with, one has to be aware of some peculiar structural aspects of the workforce at Westrail, or with railways in Australia in general. The typical railway worker is male (only 6% of staff were female in 1990/91), a wages and salary earner, working between 35 and 40 hours a week (70% of all rail

workers), occupying jobs with a low skill level intensity (54% of all staff are in the least skilled occupations). Typical for Westrail (or for that matter for all Australia) is a most culturally diverse workforce. This does constitute a barrier to new skill acquisition in those cases where English language competency is given at a moderate level. Just the more surprising that Westrail does not keep a record of the number of employees with non- English speaking background (see query of the Equal Employment Opportunity Commission, EEO-Report 1990/91). There is also a fairly clear division between blue and white collar workers, which is being reinforced by industrial awards and demarcations (75% of the workforce are blue collar workers, i.e. wages employees). The few women there are mainly in lower level positions in the clerical and catering areas, also in cleaning. Only few women are in nontraditional jobs, e.g. as apprentices in the Midland workshop (4 out of 27 apprentices). The workshop turns out to be at the centre of reform. This is the reason why we shall focus on the workshop in order to find out about the reform process and the role of immigrants therein.
The largest decline in the workforce was in the area of operations and technical services. The most redundancy-vulnerable occupational groups were tradespersons (ASCO category 4, i.e. toolmakers, carpenters and joiners, metal fitters, machinists, forgers, metal casting etc) and labourers, mainly trades assistants and railway labourers (gang).In the unskilled occupations physical strength and endurance is required. The labour force adjustments are targeted at certain age and skill groups, i.e. older workers, who have the retirement option, and track maintenance gangs as well as workers in the workshop. We shall now turn to the analysis of the workshop, where the rationalisation has been most pronounced and the share of immigrants is very high (in the order of 25%).

The Midland Workshop:

The main workshop of Westrail is the Midland Workshop. It has the responsibility for major maintenance of locomotives, wagons, railcars and large mechanical equipment. It also carries out the construction of wagons and the manufacture of some railway supplies. A great proportion of non-maintenance work is carried out, e.g. engineering work for non-railway clients. The organisational separation and commercialisation could potentially result in a viable business unit. Until now, however, staff reductions are the most outstanding feature, i.e. cost cutting. Out of a work force of 2400 in 1981 (excluding engineering services) only about 900 remained by 1991. The staff reduction amounted thus to 1500 or 62% over the decade, substantially above the Westrail average. The reductions were particularly pronounced in the wages section; employment there declined by 1500 to a level of 770 in 1991 (-65%). It is in this section where the share of immigrants is particularly high (still in the order of 20% to 25%). A large proportion of these immigrants has come in the wake of WWII from Europe, particularly Italians and Yugoslavs. The problem of structural adjustment is not, however, reserved to first generation immigrants but extends to members of ethnic groups in general, who tend to have English as a second language. This has to be understood in the context of the rural setting, where there has been a tradition of working for the railways over generations with little regional and occupational mobility, given little employment possibilities. People are living in ethnic centres which provide the social network; little contact with the outside world is given. The problem is that in this area, given the basic agricultural (wineries) background - agriculture being a sector under severe competition, undergoing structural reform of the labour saving kind just as the railways - not many opportunities for reemployment exist. Those who have the greatest potential to find a job elsewhere as far as skills and circumstances are concerned left Westrail. These groups entail younger workers, who did not yet develop

occupational dependency on the railway by the acquisition of industry-specific, nontransferable skills; besides, the young tended to have not approached the life cycle stage of marriage, mortgage, family and associated financial commitments which rendered them more mobile also in the regional context.
In the main tradespersons and unskilled workers have left Westrail. There are no more unskilled workers in the workshop. General skills are more easily transferable to other industries. Rail workers with rail-specific skills are to a large extent trapped to the railway system.
The shedding of labour in the workshop did not lead to productivity increases, just to cost and output reductions. The technology used in production is outdated - there is not one machine less than 10 years old; there are no computeraided tools in any of the "shops". At the moment a major job is underway - the workshop supplies under subcontract for Brown Boveri the electricity augmented bogies for the new wagons, which are being manufactured by Brown Boveri for Westrail to substitute the old dieselengines.
Some sections in the workshop are becoming obsolete as the technology changes - for example the production of tarpaulins. Nowadays hardly any tarpaulins are needed anymore, only for some grain transports. Container traffic has taken over. The production of tarpaulins is a dead trade. Thus workers in this section, basically an ethnic nucleus of Yugoslavs, are captive to Westrail. The same development prospects are given for the paint shop and the carpenters. In the boiler shop, the foundry and other areas the number of workers decreases due to technological developments, which inrease the reliability of locomotives and wagons and reduce thus the frequency of repairs. Another aspect, which has to be taken into consideration, is the effect of multiskilling and broadbanding on unskilled labourers. Skilled workers have to do the odd unskilled jobs, which are within the competency of the worker, in the course of the production process in the quest for

increased efficiency, thus reducing the need for unskilled workers.
In order to change this bleak outlook into the future a new approach to the function of the workshop had to be developed. Instead of letting the structural change in a competitive environment take its toll, a business outlook has been established. The reorientation has had many facets. The workshop shall in future not only supply repair services and services to the machinery to the different sections in Westrail but will look for work on the external market and the community in order to work more to capacity levels. Already the shift of focus towards the outside world entails changing the appearance of the environment, e.g. make offices more open to the business contact from outside, to become more service oriented. The next aspect concerns the dealing with social change, as contrasted to technological change, in particular a more equitable treatment of women as far as appointments, promotions, training development and the like are concerned. In the olden days, i.e. at the beginning of the eighties, even clerical positions were typically occupied by men (male secretaries and typists). As a precondition for the equal opportunities of women in the workshop a whole set of investment in infrasructure had to be undertaken, e.g. the provision of toilet facilities for women (now under construction). As a result of this reorientation women were employed as apprentices for the first time in 1990/91.
A lot of investment has been undertaken by the staff of the workshop, doing jobs that are actually not "on the job" but entail carpet fitting, building toilets, changing the outlay of offices etc. These types of jobs are done in order to facilitate the commercialisation of the workshop. They are not taken into consideration in the traditional measure of productivity (which takes into account input-output ratios, not infrastructural aspects). Therefore "productivity" has still not been improving in the workshop even though staff reductions have been substantial.

In order to facilitate redeployment of workers who are trapped into railspecific skills and therefore do not move onto the external market (where the job outlook is bleak,given an unemployment rate in the order of 10%),the foundations of reskilling have been laid by starting a pilot English literacy program in December 1990. This course was open to any worker; obviously it is of particular benefit to ethnic workers, be they first or second generation migrants, who have English as a second language. Furthermore apprenticeship training is offered to older workers as well as to new intake of youth. There has also been some recruitment of skilled workers from the external labour market, e.g.fitters, because the internal system of redeployment or reskilling was not successful in providing the supply.

The process of environmental change is well under way and extends to management-unions-workers relationships. The attitude of unions and workers towards restructuring, particularly award restructuring, has changed from a confrontational one (until 1986/87) towards a consultative and more co-operative one in 1990/91. The award restructuring entails changes in restrictive work and management practices, reduction in demarcation barriers, multiskilling, measures to facilitate the introduction of new technology, broadbanding of award classifications and improved training arrangements. Broadbanding would allow greater flexibility in using staff within the same classification level while allowing staff to acquire and use a broader range of skills. As of yet a new management and work organisation structure has been drawn up. Now the identification of the skills of the existing workforce is underway leading up to the new job assignement and necessary skilling programmes. Demarcation lines have not been tackled yet due to the complexity of the matter and the implications for other industries.

Conclusions as to immigration:

Immigrants have helped to build up the infrastructure of rail transport in the past. Now there are still many working with Westrail, not causing any hindrances to micro-economic reform. A new form of migration is becoming apparent and that is the introduction of foreign workers under temporary contracts to facilitate the transfer of new technology to the Australian workforce thus rendering it more productive.

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HAMERSLEY IRON PTY.LIMITED

Hamersley Iron is a subsidiary of CRA (Conzinc Riotinto of Australia Limited), one of the world's largest mining companies with a wide range of resources. These include aluminium, coal, diamonds, salt, zinc, lead, silver, copper, iron ore and gold. Over 19000 people are employed by CRA group companies, at Hamersley Iron alone 3100 (1991). The mining industry is the largest export earning sector for Western Australia, earning over 60% of the State's total export revenue, iron ore constituting a fair share. It releases Western Australia from its great dependence on agricultural products.
Hamersley Iron was founded in October 1962, after massive iron ore reserves had been discovered by CRA geologists in September 1962 (Mount Tom Price). The lifting of federal government restrictions on iron ore exports in December 1960 had paved the way for exploration of iron ore reserves in the Pilbara region in the north west of Western Australia.1)[1)] The discovery came in time to fill the growing need for iron ore particularly of Japan, which was rapidly growing and building up its infrastructure thus investing heavily in steelproduction. By 1975 Australia was supplying almost half of Japan's needs for iron ore.

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1)An export embargo had been imposed by the federal government of Australia in 1938 in order to protect the local iron and steel industry, last but not least to prevent resourceless Japan from establishing an enterprise in northwest Australia. It is ironical that Japan constitutes the largest single market for Hamersley Iron now.

Australia has huge reserves of high grade iron ore - in the Pilbara region alone 40 thousand million tonnes of iron ore with an iron content of greater than 55% by weight. There are only Brazil, India, South Africa, Liberia and Sweden with such high grade iron ore. Australia today is the second largest exporter of iron ore, after Brazil, in the world. Only small amounts are used domestically. Hardly any value-added industry has been established so far in Australia.
As mining on Mount Tom Price and the construction of the facilities, e.g. the Port of Dampier, the railway line linking the mining site with the port, the power plant etc., started in 1965, workers from 50 nations swarmed into the Pilbara, an arid land where hardly any habitation existed, only a few homesteads (cattle stations). In 1966 more than 30% of the population in the region were immigrants, 47% of them from non-English speaking parts of Europe. Two decades later immigrants still account for some 27% of the total population, 60% from mainly English-speaking countries. Hamersley Iron helped found four outback towns with a total population of some 15000.
Work on the railway and port went on simultaneously. About 1400 men constructed the railway tracks. There were two large groups, 300 Thursday Islanders who worked for contractors and Yugoslavs, who were part of a large wave of immigration from post WWII Europe. Yugoslavs were above all unskilled labourers and tended to settle there. The intake of immigrants was particularly pronounced in the 60's and 70's as mining operations were established and rapidly expanding. As far as the railway operations are concerned direct recruitment of signal engineers, locomotive engineers and other specialist labour from New Zealand took place in the 80's, since Hamersley Iron experienced scarcities of labour and New Zealand had a surplus due to the decline of railways there.
The mining company had to build and operate the townships along the production sites, Dampier, Tom Price and Paraburdoo. Paraburdoo began commercial production in March 1973. The standars of comfort of the housing (airconditioning) and

sparetime facilities had to be high to attract people to work in the isolated region.
From the beginning Hamersley Iron supplied its own power. The Hamersley Iron Power and Distribution Division (thermal power station) has the supply authority in its own right. It does not only generate, transmit and distribute electrical energy to mining operations but services also the townships of Dampier, Tom Price and Paraburdoo. In 1986 the power station converted to natural gas firing (from the North West Shelf Gas Project), which is environmentally superior to the former fuel oil firing (sulphur dioxide emissions). Power surplus is sold to the State Energy Commission of Western Australia (SECWA).

Before going into the structural details of the workforce of Hamersley Iron it should be pointed out that the company has its own industry award. In 1987 the award has been restructured as a result of negotiations between management and nine unions; it has been authorised by the Western Australian Industrial Relations Commission. Over the years the worker-management relationship has been improving which led to a large reduction in turnover. The general economic recession impacts also upon duration of stay with the company as a consequence of lack of alternatives. The new award contains all the elements of restructuring we have observed at Westrail, with the difference that at Hamersley Iron the new structures have been put into effect already. There has been substantial change in the classification structure, reducing demarcation lines as a consequence of broadbanding. All jobs are being classified according to key elements (tasks) to a position, adding supplementary tasks (routine or incidental), which would usually be lesser paid duties, but if carried out by the job occupant do not entail a reduction in wage; the wage is always linked to the primary task. Supplementaries are in the main routine minor maintenance jobs. The basic idea is to achieve utmost continuity of the production process thus increasing efficiency, which entails working within the competency of the

employee. The company increased wage levels as a consequence of removed restrictions which brought about productivity gains. It also entailed additional training, e.g. for shift tradesmen and maintenance employees, in order to make them fit into the new job role definitions. The upskilling allows the workers to carry out a broader range of tasks. Part of the upskilling was training in the English language, taking into account the diverse ethnic backgrounds of the workforce.

Structural aspects of the workforce:

Going over the different phases of mining highlights the skill intensity of the industry. Mining resembles a computerised schedule of a modern factory; an ore modelling programme allows the short and long term development of the mines to proceed with a high degree of precision.
Currently 3100 people work for Hamersley Iron, two thirds are awards employees, one third staff employees. The majority work in the Pilbara (93%). In Perth, the head office, where longterm resource strategies are developed and planned, 217 persons are employed, and 4 staff members are overseas, managing offices in London and Tokyo.
Of the 2100 awards employees 28.5% were born abroad, the majority of them in Europe (about 70%). The other major group is from New Zealand (109,i.e. 18.5% of the immigrants). Of the Europeans 70% came from Great Britain, i.e. 14% of all awards employees. The structure of staff employees by country of origin is similar. 32% of the currently employed have been born abroad, 200 or 61% of them in Europe (again the majority of them, 82%, in Great Britain). New Zealanders constitute some 4.2% of all staff employees, ex aequo with Asians of all sorts of country background. The Commonwealth countries are both in the wages section as well as in salaries the dominant suppliers of immigrant labour. No wonder that English language competency is to a large extent given with Hamersley's immigrants. Some Australian born, e.g. Christmas Islanders, share with some of

the "other" immigrants the problem of English being their second language. Germanspeaking immigrants constitute for example some 1.9% of all employees; they are to a large extent engineers and tradesmen.
The duration of work with Hamersley Iron has generally increased over time. It is, as was to be expected, longer for salaried workers than for wages personnel. Of the staff employees 56% had been working in Tom Price, Paraburdoo and Perth for more than 5 years, a lot of them had been with the company since the very beginnings (about one quarter of all employees). In Dampier, particularly in the railways section, the average length of service with the company has been longest (about 70% had been with the company for more than 5 years). In the wages section turnover is usually higher - but even there 50% of all workers have been with the company for more than 5 years. Again Dampier has the longest duration of stay (70% more than 5 years), being the oldest establishment, and Paraburdoo the most recent - 36% of all workers were there for more than 5 years.
Of all employees in the awards section the European born have the longest years of service. 67% of them were with the company for more than 5 years. Almost all Yugoslavs and Germans have been there since the very beginning. New Zealanders tended to come later. The same holds for salaried workers.
Looking at the skill structure of the workforce one has to observe an impressive variety of professional skills. This is not surprising when considering the sequence of work performed in the mining process. First the geologists map the iron formations; then drilling takes place to define the orebody shape, the content of iron and impurities. Then the ore is mined by open pit methods. The ore is first drilled and then broken by blasting. Electric face shovels and hydraulic excavators load the ore into haul trucks, which range in size from 150 to 220 tonne carrying capacity. Then the ore is being crushed. High grade ore is being processed into lump and fine products by crushing and screening; then it is loaded onto

stockpiles. From there it goes (either overland - conveyer belt - or through a tunnel underneath the stockpiles) to the trains. Trains are pulled by 3 locomotives. They pull 206 wagons, each with more than 100 tonnes ore (length of 2km). The trains run 8 times per day. They must be some of the heaviest and longest trains operating in the world. The tracks need constant maintenance due to heavy wear and tear. The maintenance crews have little access time as a result of the continuous heavy traffic. The rail movements are controlled by a centralized traffic control system at Dampier. There are also workshop facilities to allow routine maintenance and overhauls of cars and locomotives. This is thus a completely self-contained railway system.
From the trains the ore is unloaded onto blending stockpiles and from there the ore goes into ships, specially designed for ore transport.
This overview makes clear that there is a broad range of skills employed, including mine workers, equipment operators, tradespersons, administrators and a lot of professional disciplines including computer specialists.

The international iron ore industry is highly competitive, experiencing also strong cyclical fluctuations. In order to stabilise the short and longrun demand for iron ore and through it production and employment Hamersley Iron went into a joint venture with Peoples China at Channar (Hamersley having a 60% share). China,being a country in transition from a developing to an industrialised nation which is building up its infrastructure, offers a large market thus securing a stable future for Hamersley iron.
Immigrants have played an important role in establishing the company as it is now. The contract with China opens up a new form of migrant labour - Chinese are being trained by Hamersley Iron here in Western Australia to acquire a better understanding of the functioning and the technology of mining.

They go back to China and represent then the important human link for successful future dealings between the two countries.

THE WATER AUTHORITY OF WESTERN AUSTRALIA

Overview over company history:

The Water Authority of Western Australia was established in its present form in 1985. The Water Authority Act 1984 and the Acts Amendment Act provide the legal framework. The Water Authority of Western Australia was created by merging the Metropolitan Water Authority and the water related sections of the Public Works Department in an attempt to render the public service more cost efficient.The merger was the result of an election promise by the Labour Party. As the Labour Party came into power in 1983 it set about organizing the merger in order to increase the efficiency of the service and reduce costs by eliminating duplications of functions in the two authorities.1) The merger provided an opportunity for internal re-organisation which helped reduce needs for Federal Government funding. The reorganisation followed the example of South Australia, which is the only other State in Australia which has one body responsible for water supply, sewerage and related water matters. In particular the idea of regionalisation was adopted which had been at the core of successful internal restructurization of the Engineering and Water Supply Department in South Australia.
From the beginning the role, corporate philosophy and the ojectives of the new Water Authority were spelled out. The

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1)A steering committee under Arthur Tonkin, Minister for Water Resources, was set up to recommend the course of the merger. See Report of the Steering Committee for the Merger of State Water Authorities, Perth, Sept.1984.

development of a simple, unified corporate philosophy had been difficult to achieve in the Public Works Department because of the department's extremely diverse role. The Public Works Department had been established in 1829. At various times it was responsible for the construction, maintenance and operation of all government functions such as railways, roads and bridges, water supplies and public buildings.
The new Authority has two principal responsibilities with regard to water: a) the planning of water resources and
b) the provision of services to consumers on a commercial basis.

The Water Authority of Western Australia is not the sole supplier of water. Some mining companies control water supplies and sewerage schemes in several country towns and the Rottnest Island Board controls both facilities on Rottnest Island. There is an integrated approach between the Water Authority of Western Australia and the Mines Department as to the assessment of water resources.

Strategy for restructurisation:

The reorganisation and restructurization of the Water Authority results partly from the nationwide policy of award reclassification and equal opportunity legislation, partly it is a response to the budget constraints of the Commonwealth. A review of the functions of federal and state government is underway reflecting the change in societal attitudes and community expectations about the efficiency and effectiveness of government actions and bureaucratic performance. New laws come into effect which result in one way or another in greater administrative accountability for taxpayers' money spent on the provision of public services. Western Australia has had to accept cutbacks in real terms both to its public sector borrowing allocation and Commonwealth payments. The latter fell

in real per capita terms by 5.4% p.a. over the years 1985 to 1989.2)
The regional operations of the Water Authority had accumulated significant longterm debt, the merger with the profitable metropolitan operations was to decrease overall deficits. The reorganisation was effective in that no more borrowing takes place since 1989. The Water Authority of Western Australia has financed its capital program through increased productivity on the one hand and an increase in rates and developer charges on the other. The drive for increased productivity followed a detailed strategy 3), which entailed also a substantial reduction in the workforce from 5300 in 1986 to 4100 in 1992(March). This is a reduction by 1200 or 22% over a 5 year period. The actual reduction corresponds to the objective of 20% spelled out in the Ten Year Corporate Strategy 1986. The role of immigrants in the whole process of restructurization is very complex and shall be described at a later stage, after an introduction into the overall process of reorganisation and microeconomic reform in the Water Authority of Western Australia.

1) Pillars of structural reform:

The major thrust of reform was to decentralize and flatten the organisational structure. Formal authority passed from the Public Sevice Board to the branch and regional manager level. This entailed a movement of activity from centralized specialist support groups to the decentralized operational units. This is still an ongoing process. It represents a move from a functional structure towards the modern multi-divisional enterprise, which is broken down in divisions, each having

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2)See Government of Australia 1990, Commonwealth Financial Relations with other Levels of Government, 1990-91 Budget Paper No.4, AGPS, Canberra.

3)See Water Authority of Western Australia, Reorganisation Task force, "Ten Year Corporate Strategy: Report to the Minister for Budget Management",September 1986.

responsibility for serving different markets, products or services (a multifunctional divisional structure). In the regions the various functions of the Water Authority are fulfilled according to local requirements. The regional units are accountable for their actions and play a role in the policy development. The flattening of the hierarchy enhances lateral relationships between branches, sections and project teams, thus giving more responsibility and discretionary power to the base grade employees. This flattening of the hierarchy was backed up by the creation of a workforce planning committee, which is supposed to establish a closer link between the workforce and corporate planning. The institution of a rotating membership is in line with increasing the organizational flexibility and developing a co-operative spirit and an interchangeability of personnel among assignments and promotion from within. Smaller groups tend to develop greater coherence and group identity (reduces free rider problem) and thus increase efficiency.

The new decentralized structure is in accord with the government's policy on regionalisation.

Specialized technical services remain in the head office, i.e. in areas where economies of scale are involved, as well as consulting advice, performance control and final policy formulation.

The new structure is interlinked with an integrated information technology network. This information network has been built up since 1986 and renders the new structure viable. It represents the basis for a substantial reduction of personnel in traditional clerical work and speeds up operations. Telemetry is one element in the interlinked information system. It has reduced requirements for monitoring and data collection. Telemetry refers to the electronic transmission of data from the Authority's field installations. It provides a remote control, facilitates prompt detection of bust water mains; it speeds up monitoring of pipelines, pumps, valves, chlorination levels etc. Since Water Authority operations are very diverse

work scheduling is important and assisted by computer systems, particularly in mechanical and electrical maintenance (basic scheduling system for operations).
In 1989/90 "value management techniques" were introduced, partly sparked off by the positive results obtained thereby in England.4) These techniques entail a structured approach to planning and budgeting overhead and service activities. It allows a high degree of involvement of managers at all levels in the organisation; on a co-operative, consultative basis priorities and needs are established and opportunities for improvement of efficiency are developed, e.g. examining frequencies of maintenance operations and replacement of old assets. This led to a streamlining of operations, a more efficient use of resources including labour and it facilitated reductions in the workforce.

There is a striking difference between the Australian Water Industry Organisations in general and the Water Authority of Western Australia in particular. In the other States the principal role of the Water Authority changed from expansion and construction of assets in the seventies and early eighties to maintenance of existing resources in the eighties. While the expansion of asset development was large in Western Australia, there remain substantial works of infrastructure to be carried out, for once due to the shere size of the State but above all due to continued above average population growth (Perth is the fastest growing city in Australia). The Water Authority of Western Australia has large asset development programmes for the construction of water supply headworks. Furthermore growth of an ecologically sustainable city entails the sewering of backlog areas. 24% of the city are not yet sewered,5) which has

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4) See Comparison between selected British Water Authorities and Western Australia, Water Authority of Western Australia, Regional Services Directorate, Feb.1988.

5) See Water Authority of Western Australia, Annual Report 1991, Perth.

not been a problem sofar given the loose sandy ground, but it might be a problem in the future. The prospect of continued growth of Perth, which will be linked with dwelling expansion in the form of higher density redevelopment and infill in established areas,6) could be linked with seepage from the unsewered areas and thus add to pollution, endangering Perth's wetlands (which are hydrologically linked to the aquifer system).

2) Impact of restructurization and internal reform upon the workforce:

The merger and consequent internal reform set the scene for a massive restructurization of the workforce, entailing mobility on the part of employees of all sorts, regional, functional and skillwise. This restructurization was driven by an overall perceived need for increased efficiency and thus productivity. It was linked with the introduction of new technology as well as new management design and processes, which were either developed internally or taken over from abroad through a learning process from international better practice techniques (e.g.value management techniques or microtunneling technology). The skill base of occupations is in a process of change given new technology and new management processes. The nationwide objective of award restructuring fits in with the reduction of vertical hierarchies and decentralisation, splitting the internal centralized labour market up into smaller, more flexible regional and functional units.In the regions the required skills of the workforce were already rather broad. Providing services for a dispersed and smaller population

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6) Perth is one of the most dispersed, automobile dependent cities in the world, accompanied by high energy and material throughput. It is above all environmental concerns and the costs of expanding social infrastructure rather than geographical constraints to further outward growth which suggest a more compact city form.

automatically means that operations are on a smaller scale, multi-skilling and job rotation are an obvious strategy. Now this drive for broadening skills extends to the metropolitan area (broadbanding). The emphasis will be on teamwork and frequent training, retraining or up-grading of skills of employees over the life cycle. This drive for continued adjustment, once established as a management objective upon the implementation of which managers will be evaluated, is mainly due to the introduction of equal employment opportunity personnel into the enetrprise (in 1986/87) and thus a result of the equal employment opportunity legislation.
The restructurization went hand in hand with a reduction of the workforce by 22% (between 1.1.1986 and 25.3.1992) or 1200 employees. The employment level by the end of March 1992 amounted to 4100 and plans for further reductions are underway. Staff reductions were more pronounced for wages employees than for salaried staff. The number of wages staff decreased by 32% from 3300 in 1986 to 2200 in 1992, while the number of salaried employees shrank by 7% only, from 2000 to 1900 in the same time span. The more than proportionate fall in wages employment was partly due to moving foremen up to salaried level (this tendency is at an early stage only), the major cause for the reduction was a shift in work requirements away from construction and simple operations towards conceptual rather than manipulative skills. Also the introduction of new technology, for example microtunneling, rationalized the work of ditch digging. Reduction of work in construction was thus hastened by technological advancement. Between 1986 and 1992 the workforce in construction (in the main wages employees) declined from about 600 to 200, i.e. by 400 or 67%. With the reduction of hierarchies service personnel will (and here and there already does) report directly to salaried supervisors. Also as far as repairs and maintenance of equipment are concerned a streamlining took place, e.g. some older workshops were closed, which meant a transfer of some staff and equipment

to the modern central workshop, formerly belonging to the Metropolitan Water Authority.
The reduction in the capital works programme meant also a decline in the engineering workload, both the design and construction functions. Besides, the design has become more sophisticated through computerisation (e.g. computer aided drafting, cartographic drafting), and a greater understanding of water quality and treatment processes as well as environmental issues are necessary, thus reducing the need particularly for lower level engineers. The Water Authority is one of the largest employers of engineers in Western Australia; its restructurization entails a reduction in engineers, however. Enginers are being moved laterally, e.g. into regional manager positions, and human resources managers move into top management positions formerly almost exclusively held by engineers.
The new structure is backed up by a remarkable increase in computing staff at all levels. Between 1986 and 1992 the number of employees in information technology has increased from 25 to 95,i.e. by 70 or 280%. The implementation of improved information processing systems allowed a substantial reduction in administrative and finance staff, particularly at lower levels of educational attainment (and part time employees).

3) The role of immigrants in the internal restructurization:

Immigrants have always constituted a sizable portion of the total work force, their absolute numbers and thus their share in the total workforce increased since the merger of the two authorities. In 1986 452 immigrants were employed by the Water Authority of Western Australia, i.e. 8.5% of all employees. By the end of March 1992 that number rose to 676. This means that the average share of immigrants doubled over a five-year-period (to 16.4%). Both in the salaried and wages section the share of immigrants doubled, amounting to 18.4% for salaried employees and to 14.7% for wages employees in early 1992. These average

shares do not, however, convey an adequate picture of the degree of dependence upon immigrant labour in the various sections of the enterprise. In construction for example and in regional engineering support units, where the majority of workers is blue-collar, the share of immigrants is in the order of 27% to 29%. The high share of immigrant labour in construction dates back to the expansion phase of the sixties and seventies. Immigrants were the backbone of the work force for pipe and sewage plants construction. The recruitment took place according to ethnic links, e.g. an employed Macedonian Yugoslav or Greek helped out as need for more workers arose and proposed a new worker from the ethnic community he belonged to. Thus an ethnic concentration of immigrants resulted. The three ethnic groups of Yugoslavs, Greeks and Italians alone constitute 38% of all immigrant wages employees. The pride in their work is intense and it is said that absenteeism did not occur in the past because the workers always supplied a substitute in case of illness, thus securing a continuous work process. These men, who used to work in homogeneous ethnic groups, are now well up in age. They are reluctant to move because a transfer often entails the loss of their social network in the worksphere. Up-skilling or re-skilling would constitute a difficult task, last but not least due to English being their second language. Research shows7) that the levels of proficiency in reading and writing do not improve with workers living in ethnic centres as the years of residence in Australia increase. Special English language courses are needed since the verbal skills can't be picked up in the work place given ethnically homogeneous gangs. The option of employment reduction in the area of construction is basically natural attrition, early retirement and voluntary early severance schemes. The majority of the workers meet the age requirements, given the fact that about 50% of all wages employees are about

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7) Bronwyn Stretton, Language and Literacy in the Workplace: A Study of Non-English Speaking Background Workers in the Private Sector in Western Australia, Vol.2, April 1987, TAFE.

55 years or older. No new employees are taken up as new technology of the labour saving kind is being introduced. For the future outcontracting of construction work is envisaged, should the need arise.

Apart from the ethnic groups mentioned British immigrants represent the largest group of immigrants, both in wages as well as in the salaried section. In 1992 British immigrants made up 40% of all immigrants (43% of all salaried and 38% of all wages employees). They, of course do not face the language problem in the course of adjustment. But they are, just like the Australians, particularly in the lower skill areas confronted with the need for multi-skilling as staff numbers decrease. The internal restructuring entails a move from specialist (blue or white collar) work to multiskilled work. This example shows that new technology and work methods and organisation must not be linked with a bipolarisation of the skillstructure of the workforce, as had been suggested by some futurists, but that it leads to a compounding of several jobs and skills by a single worker. As low skilled workers see a chance to access the career paths upwards they are not against multiskilling. The skill assessment of the existing work force is well underway. The next step is further skilling whereby the new aspect is the introduction of literacy and numeracy training for the least skilled workers. This is a priority. Higher skill levels have had access to further training along career paths already in the past. Progression along a career path requires the on-going development of a range of increasingly complex communications skills to meet the needs of advanced technical and social environments. Communication skills require progressive upgrading just as technical or commercial skills. Now the assignement of workers to regions sets in. To obtain regional mobility turns out to be a difficult task, given the large regional differences in the cost of living. Since a differentiation of the wage structure according to region is not a politically viable proposition, subsidies are considered, e.g.for electricity to allow for air

conditioning, and thus to reduce the regional differences in the cost of living.

Apart from construction and regional engineering support another area sticks out with particular reliance on immigrant labour, information technology. This is the function targeted for growth, being at the core of the internal reform towards an efficiency-increasing decentralisation of work. In information technology the immigrant share in the work force amounted to 32% in March 1992. Also in water supply planning and design the share of immigrant labour is as high with 33%. Workers in these areas are all salaried employees. The ethnic diversity of immigrant labour in these sections is very high. In information technology a clear movement towards a higher intake of immigrants of Asian origin is discernible. Half of the immigrants are from Asia, particularly from Hong Kong, India and Vietnam, the other half from Europe, the majority from Great Britain. As an asider one has to mention that the share of women has increased in the information technology section particularly fast. The Water Authority has traditionally employed mainly men. In 1986 the share of women in the total work force amounted to 9%. It rose until 1992 to 12.3%. In information technology the female share amounts to 20%, however, half and half Australian women and immigrant women. The Water Authority of Western Australia experienced some difficulties in recruiting computer staff on the Australian market and made above all the uncompetitive salary level in public sector employment responsible for this plight. Negotiations with the public Service Board took place. The route chosen in order to reduce fluctuation of computer personnel was increased training, in-house and off the job, coupled with accelerated advancement. The high share of immigrants in this field has to be seen therefore in the light of the relatively tight market for information technology specialists and the institutional

rigidities of an internal labour market which do not allow for large internal structural flexibility of wages.
Another aspect has to be mentioned as far as the "new" migration patterns are concerned. The adoption of new technology from abroad by The Water Authority of Western Australia, i.e. the microtunneling technique from Japan, was linked with a transfer of human capital from abroad to the Australian workforce through a temporary work contract for the skill transfer. This is a marginal matter for every single firm but an important instrument for the effective transfer of international best practice techniques and production methods and thus for macroeconomic productivity increases.

Concluding remarks:

The Water Authority of Western Australia has been undergoing a significant structural reform which is still an ongoing process in its strive for increased efficiency. Immigrant labour has played an important role in this restructurization process covering a large gamut of change of immigration features which are observable in the global immigration data. It pictures both the change
of skillrequirements over time and the changing pattern of ethnic origins of immigrants. The role of technological change in the company's attempt to cope with the changing demands is highlighted and the human factor therein. The strive for increased productivity of all the firms examined is obvious and successful, but it entails a sizable reduction in the total workforce, particularly at lower skill levels, which does not facilitate the task of reducing global unemployment.
Microeconomic reform is one causal factor for unemployment to persist on a high basis and an economic upswing has to be longer and more pronounced than in the past in order to have a significant decreasing effect on unemployment.