 Tyne and Wear  
Transport

# Meet Your **Metro**

Financed by  
 TYNE AND WEAR  
COUNTY COUNCIL



# Meet Your Metro

The heart of Britain's first fully integrated  
public transport system.

Developed by Tyne and Wear Passenger Transport Executive

Financed by Tyne and Wear County Council

# Meet Your Metro

This is a booklet about your Metro. It's to say what Metro is and how Metro will improve public transport in Tyne and Wear.

## Here's Metro in a nutshell:

- More mobility for all
- Part of a whole new transport package
- Efficient and electric
- Rapid and reliable
- Fully operational in the early 1980's

# A Total Transport System

Metro and a new-style bus route network have been designed together to bring a vast improvement to public transport in Tyne and Wear.

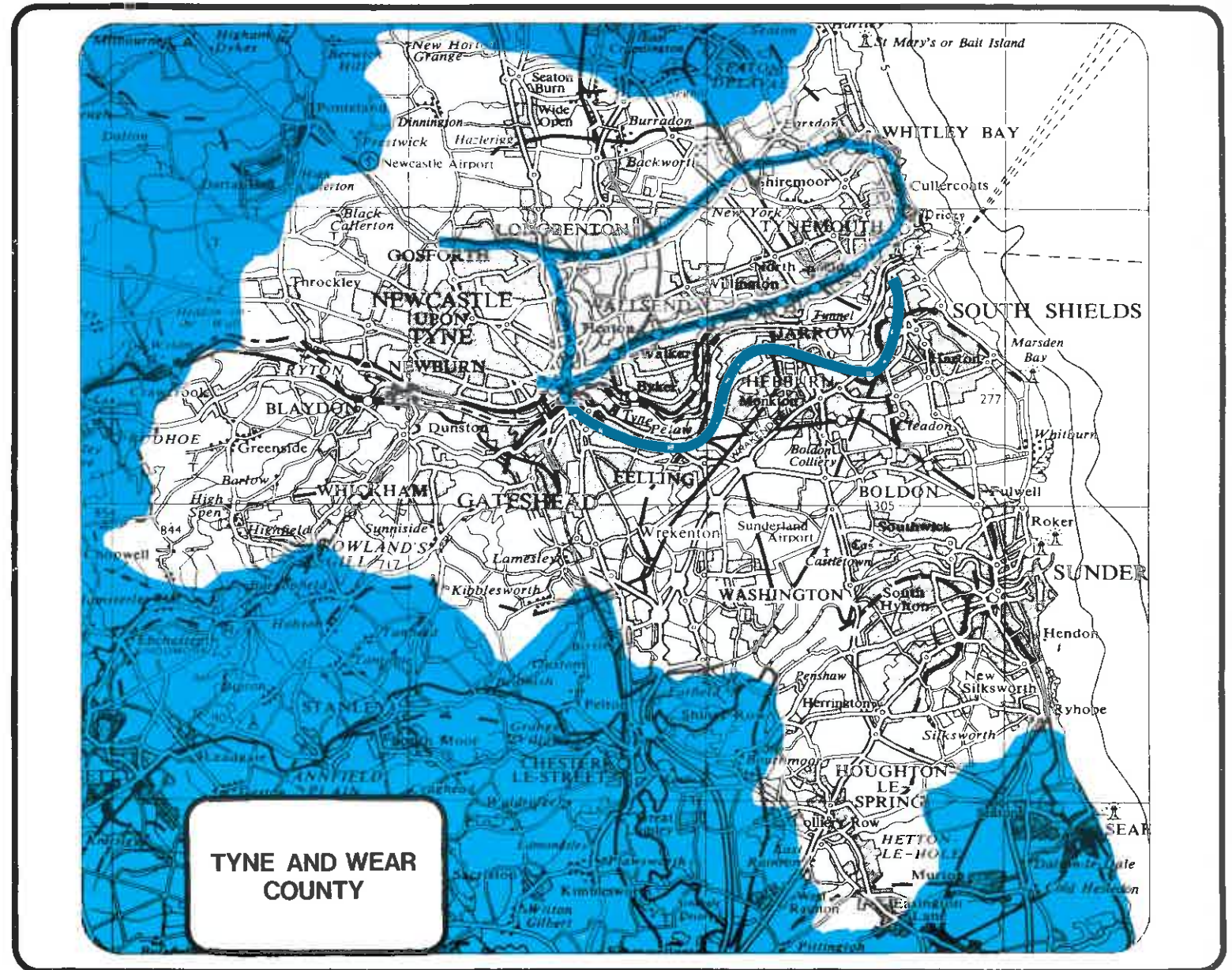
Metro itself will form the heart of the new system speeding passengers from many areas of Tyneside to new stations in the very centres of Newcastle and Gateshead.

New bus services will run within the areas served by Metro to link with Metro at most of the 42 stations on the system.

Metro and bus services will together form an integrated transport system to open up the whole area to an extent not previously possible for the public transport user. They will provide a whole new range of destinations for work, pleasure or shopping.

As Metro services will be frequent and fast, many journeys will be quicker.

It is also intended to introduce a new ticket system which will be simpler to use and provide the opportunity to make journeys by bus and Metro on one ticket.



The blue line shows the route of Metro.

# Improved Transport for All

How Metro is designed to help everybody.

- People living near Metro stations can get frequent and direct services to most of Tyneside, including Newcastle and Gateshead. Public transport coverage of the County will be improved.

- New bus routes within the areas served by Metro will give passengers a new range of local destinations. And they will serve as many Metro stations as possible to allow easy transfer to Metro.

- Buses from outlying areas will serve new Metro Interchanges to give fast and easy journeys to the hearts of Newcastle and Gateshead.

- Bus services whose routes do not go close to Metro will enjoy priority in reaching Central Tyneside.

- Motorists will be able to park and pick up and set down passengers at Interchanges for quick and effortless journeys by Metro.

Metro means Integration—Buses and Metro together will give Tyne and Wear a transport system to be proud of.



This model shows Regent Centre Interchange as it was first envisaged.



People making journeys by Metro can be easily set down and picked up at Metro Stations.



New bus routes within the Metro area will give passengers a wider range of destinations.

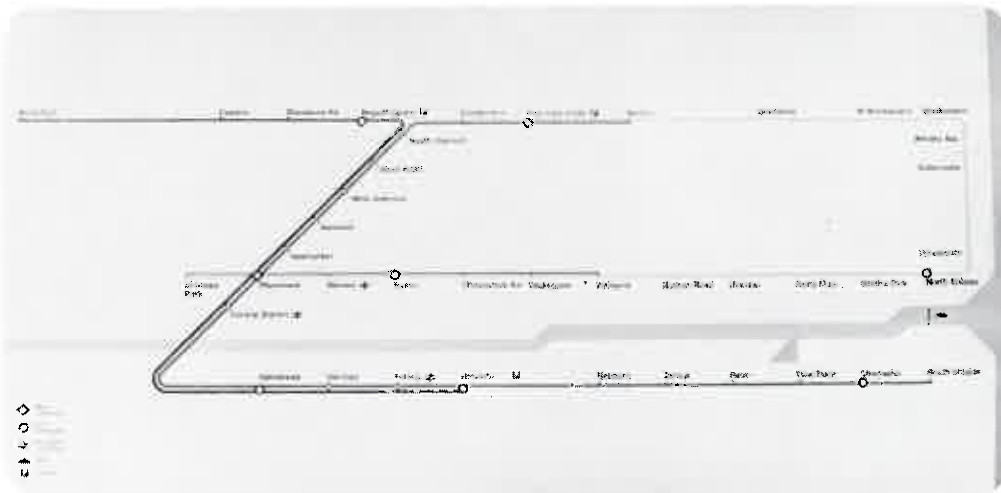
# Financing Your Metro

The Tyne and Wear Passenger Transport Executive is reimbursed the whole of its expenditure for the construction of Metro by Tyne and Wear County Council. The County Council receives approximately 70% of this sum from the Government by way of Transport Supplementary Grant, which is a grant in aid of all its expenditure on highways and transport activities (including Metro construction). The balance is met from local sources.

Metro is the County Council's priority transport investment.



# Metro — Serving the Local Community



*This diagrammatic map showing the provisional network has been devised for use in Stations and Metrocars.*

Metro will have 42 stations, but more can be added to serve new development areas when required.

The hub of the system consists of 6.4 km. (4 miles) of underground route in the central area. On the north-south route there will be underground stations at Jesmond, Haymarket, Monument, Central Station and Gateshead. The centre of the system will be at Monument where the north-south and east-west routes cross.

The east-west route will start from a new underground station at St. James and run via Monument to another new underground station at Manors before surfacing to cross the Ouseburn valley on a new viaduct to Byker. It will join the existing North Tyne branch of the railway west of Walkergate station. From there the route will continue round via the Coast, Four Lane Ends

Interchange and South Gosforth to join the north-south line at Jesmond and proceed under Newcastle. At South Gosforth there will be a junction with the present freight only railway line to Kenton Bank Foot. This line will be re-built for Metro passenger operation and will serve the new Regent Centre Interchange for bus and car users.

South of the River Tyne, Metro will reach the surface at Old Fold and then follow the existing railway line to Tyne Dock. From there a new section of line will run through Chichester to South Shields. Interchanges at Gateshead and Heworth will enable bus users from areas south of the Tyne to transfer to Metro for their journeys to the central area or the North Tyne area. Heworth Interchange will be the major point in this area for car users transferring to Metro.



*Buses approaching Four Lane Ends will all serve the new Interchange here.*



*A new Metro Station at Byker will serve this developing community.*



# Metrocars — Comfort on wheels

The Metrocars are articulated. This means that each car has two body sections hinged together in the middle. Each car has three bogies, one under the middle and one at each end of the car. The car bodies rest on air suspension to give a smooth ride and the use of resilient wheels and a modern transmission ensures quietness. There are seats for 84 passengers and ample space is provided for standing passengers in peak hours. Metrocars can operate singly, or coupled together in pairs, according to traffic demand.

The cars will be ventilated in summer, and heated in winter. They will have bright modern interiors and will feature a public-address system so that announcements can be made to passengers.

There are four doorways on each side of a car. Inside these doorways and over the central join there is space for pushchairs, shopping and luggage. The doors are automatically locked while the car is moving and are released by the driver at stops. They can then be opened by passengers pressing a push-button. Before a car leaves a stop the driver presses another button to close and lock the doors.

Metro cars are driven by electricity, and are thus quiet and pollution-free. Power is taken from an overhead wire at 1,500 volts dc by a pantograph on the roof of each car. The current is fed via control equipment to the electric motors on the end bogies. A comprehensive braking system is fitted with 3 separate elements to cope with both normal and emergency use.

## **SAFETY**

Metro passengers will be protected by safety devices built into the Metrocars and their control system. Should a driver attempt to pass a signal at danger the car will automatically be braked to a standstill. In addition if the driver releases his grip on the 'dead-man's handle' then the brakes will automatically be applied.

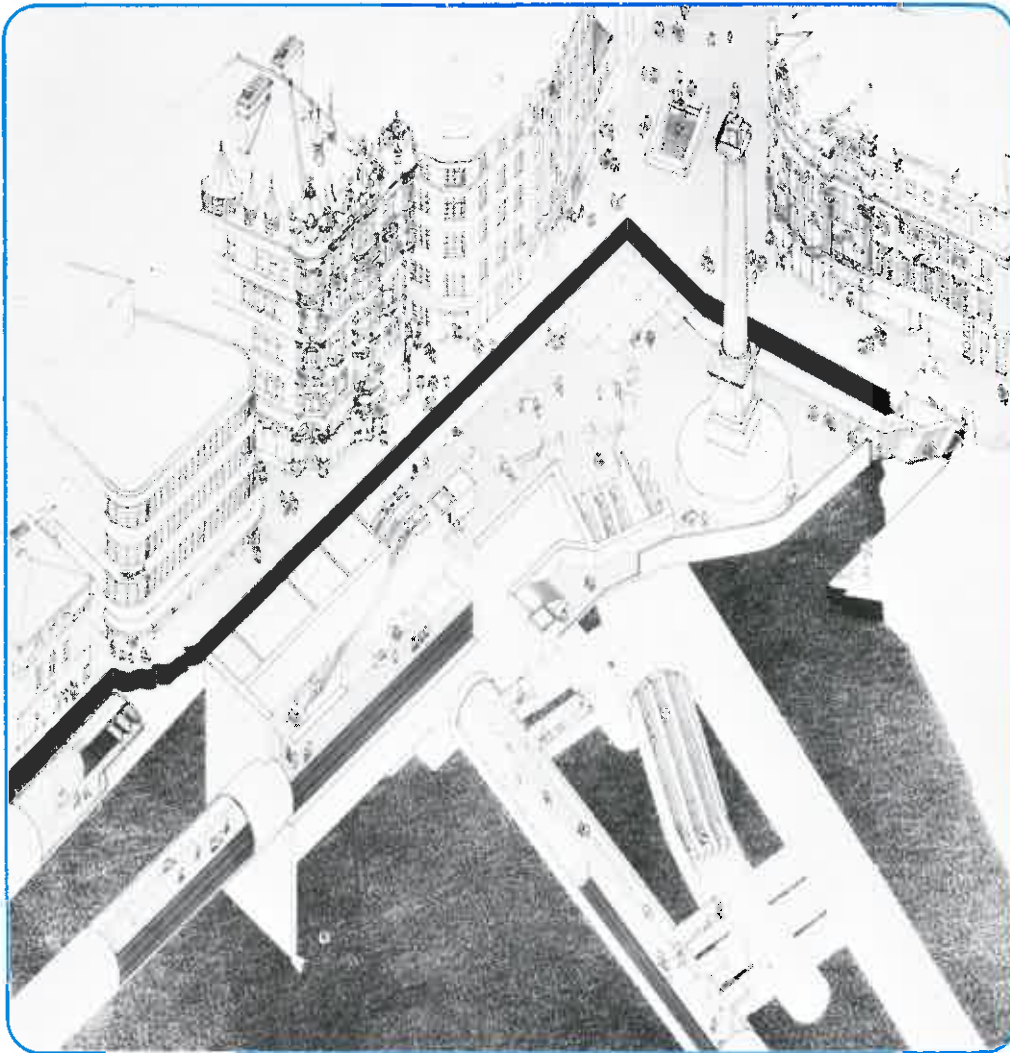


*The bright modern interiors of the Metrocars will give passengers a pleasant environment to travel in.*



*On arrival at a Metro Station the car doors can be opened by passengers pressing a button.*

# Metro Stations



*At Monument Station the North-South and East-West Metro routes will cross. This artist's impression gives a 'behind the scenes' look at the station layout.*

*This mock-up of Monument Station was used to help plan the station interiors.*

Metro stations will be bright and functional but apart from that they will not all be the same. The central underground stations will be a great contrast to the new 'Metrostops' in outer areas, and to the large transport Interchanges now under construction at Regent Centre, Four Lane Ends, Heworth and Gateshead. All stations are being designed for ease of cleaning and maintenance and underground stations to keep noise to a minimum.

Automatic ticket vending machines will be installed at all stations from which tickets will be issued to public transport destinations in Tyne and Wear. After buying a ticket passengers will then pass through an automatic ticket-checking barrier to get to the station platform.

At underground stations in the central area and at the major Interchanges passenger and train movements will be monitored by closed-circuit T.V. cameras. These cameras will be linked back to the Metro Control Room at South Gosforth.

All stations will be equipped with a public address system used to broadcast travel information to passengers.

At stations in the central areas comprehensive travel information will be displayed in a clear format to show passengers how to get to their local destinations. This will be reinforced at other stations by diagrams of bus routes serving that station—and a street map of places within easy walking distance.





# Metro Control

Metro's nerve centre will be at South Gosforth. The central control room here will run the signalling system and the T.V. and radio equipment to keep controllers constantly in touch with drivers, mobile supervisors and maintenance staff.

The position of each car will be displayed on an illuminated route diagram and controllers will regulate trains via the two-way radio system.

Remote control of power distribution and station equipment will also be handled at South Gosforth.



*Metrocar drivers will be constantly in touch with the South Gosforth Control Centre.*



*The interior of the Control Centre will be similar to this one in Germany.*

# Metro — Simple to use

When you buy your ticket to travel on Metro it will be from an automatic ticket machine unless you bought it on a bus. Ticket checking during the journey will be by roving ticket inspectors.

The present weekly or monthly tickets such as the Tyne and Wear Travelcard will be available on Metro and on buses. Concessionary and Scholars' passes will also continue to be available.

Metro services in the central area will run at intervals of approximately 3 minutes in peak hours. The peak-hour service frequency in the outer areas will be every 10 minutes. The most frequent service is thus where it is needed, that is through the centres of Newcastle and Gateshead to the major interchanges.

Special facilities are being provided for the elderly and handicapped. These include lifts, gentle slopes and well-sited handrails. The Metrocars will be easier to board than either buses or existing trains.



*An experimental ticket machine at the Haymarket Bus Station was used to gain experience for the possible use of a similar system on Metro.*



*Metrocars will be very easy to board.*

# Metro and the Bus User

Many bus services heading for Newcastle and Gateshead from out-lying areas will serve the new Metro Interchanges now being built at Regent Centre, Benton Four Lane Ends and at Heworth. From all these Interchanges a frequent Metro service will leave for the central area and other destinations from platforms close to the bus stands.

At Gateshead a new bus terminal over the Metro station will allow a large number of bus services from a wide range of places to the south to feed directly into Metro. This will considerably ease the congestion on the bridges over the River Tyne, and speed journey times throughout the central area.

When Metro is finished there will still be large areas—notably to the west and south west of Tyneside—where buses will cater for nearly all transport needs. But in these areas bus passengers will be better off after the introduction of Metro. This is because bus services from places not served by Metro will be given priority in reaching the central areas—and these should be less congested.

Many bus routes at present coming into the central area from places that will be served by Metro will be altered to complement the Metro service. Where possible suburban bus services will be based on district centres to provide for local passenger journeys in these areas. These new routes will serve Metro stations wherever possible to allow passengers to change to Metro for journeys to the Central area or on other Metro routes. Many bus routes will serve the new Metro Interchanges.

Wherever possible bus services will not parallel the Metro as this will be unnecessary. For example some of the bus services which now cross the Tyne Bridges will instead serve the new Transport Interchanges.

Many new buses are being delivered to give a really top quality, reliable and comfortable bus fleet ready for the introduction of Metro.

Buses and Metro together will give Tyne and Wear an integrated transport system which will be the best in this country.



*Bus services from areas away from Metro will be given priority in reaching the central area.*



*Many new buses now on order or being delivered will ensure a top quality bus fleet for Tyne and Wear Transport.*

# Metro and the Motorist

Metro has got big benefits for Motorists.

The car parks at Regent Centre, Benton Four Lane Ends, and Heworth Metro Interchanges will let motorists park all day and transfer to Metro to avoid the frustration of driving to the central areas during peak hours.

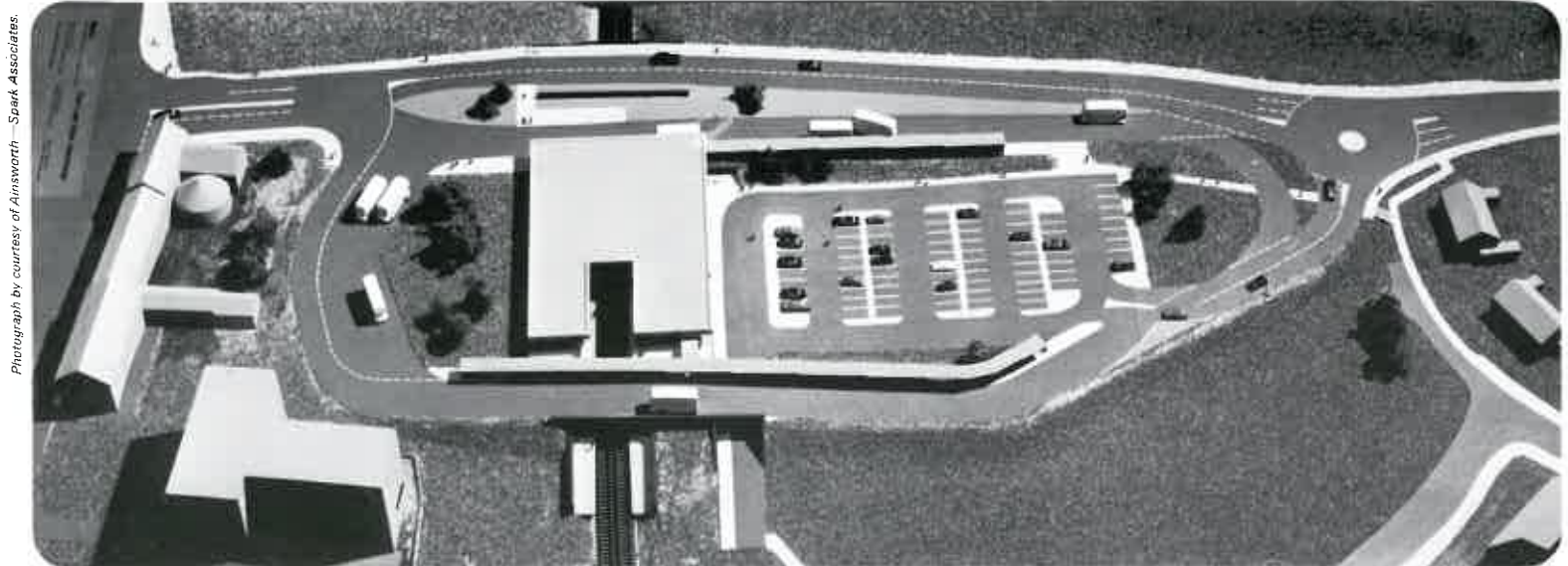
But that's not all—

Evening and weekend shopping or business journeys to Newcastle or Gateshead can be made in comfort on Metro.

The new Monument Station has a direct link to Eldon Square shopping centre—while Haymarket, Central Station and Gateshead will be invaluable for shopping and business trips to the town centres.

Park and Ride is already an established fact in Tyne and Wear. For many years motorists have made wide use of the special Saturday park and ride bus service from Fenham Barracks to Central Newcastle.

Metro means an extension of Park and Ride—each Metro station will provide facilities for motorists wishing to travel to the central areas of Gateshead and Newcastle.



Photograph by courtesy of Ainsworth - Spark Associates.

*Car parks at Interchanges will open up the Metro system to motorists.*



*Park-and-Ride by bus is already popular with motorists and now Metro will extend this by giving Park-and-Ride facilities at many stations.*



*A direct link from Monument Station to Eldon Square should appeal to shoppers travelling by Metro.*

# Metro and the Community

Metro will give an enormous boost to the economy of Tyne and Wear. Not only will it give easy access to encourage industrial development, but it will also stimulate inner city redevelopment in areas such as Byker.

All great cities of the world have reaped the benefits of a Rapid Transit system—and now Tyne and Wear will be the first area in the United Kingdom to have a fully integrated public transport system made up of Metro and bus services.

Train services are linked in too. Passengers from Sunderland can transfer to Metro at Heworth to go to the centres of Newcastle or Gateshead or elsewhere on the system.

Even when only the first phases are completed Metro will give the people of Tyne and Wear more mobility than ever before. Metro is also designed for future extensions and studies for these routes have already been undertaken.

## More mobility means

- faster journeys to work or school
- easier shopping
- less time spent travelling
- improved access to all parts of the conurbation for both work and play and more besides.

For example the prospect of greater mobility is already attracting new industries to Tyne and Wear. Commercial development is taking place in the centre and industry is developing sites on a number of other parts of the system creating new jobs. Job mobility and new jobs which will help the area to prosper are just two aspects of Metro's importance.

- Metro—Currently Britain's biggest urban public transport project.





# Metro's Background

Metro was born in 1971—just six years ago. That's when the former Tyneside Passenger Transport Authority and Executive were faced with the problems of providing the right quality of public transport to meet the challenge of the 1980's. The Passenger

Transport Executive's guidelines for this were the recommendations made in the Tyne Wear Plan. (This was a land use and transportation study commissioned by all local authorities in the area in the late 1960's.)

The Tyne Wear Plan's findings were as follows:

- (a) Existing public transport services were not properly integrated and buses were suffering from the effects of traffic congestion. More cars were being bought, meaning more congestion, pollution and frustration—and more roads. More roads meant knocking down many houses to make room for parking areas and motorways . . . Clearly this was unacceptable, especially for those without their own transport.
- (b) The existing rail network failed to serve the city centre. Operated by slow and ageing diesel trains, it was no longer suited to modern travel demands. Rail services were making a loss too—about £1½ million a year at that time.

So the study Plan reconsidered the situation. A number of possibilities ranging from more investment in roads with many bus services, to a massively improved suburban railway system were examined. These studies showed that the rail network offered considerable potential—in the form of a super-tram system. A light rail or Metro system linked with a truly-integrated network of buses, ferry and British Rail local services was a better alternative to the previously planned urban motorway network. On its own track, independent of road congestion, Metro offered the solution to the area's public transport problems.

A working party from the Passenger Transport Executive and British Rail was set up to investigate whether the North and South Tyneside railway lines could be converted for Metro operation, and this proved that Metro could be built.

The Passenger Transport Executive then drew up the Tyneside Metropolitan Railway Bill to get statutory approval. This Bill went through Parliament and received Royal Assent in July 1973. Finance for construction had previously been made available in the form of a Government grant. And so we began to build Metro.



# Metro — starting in 1979

Metro is due to be opened in stages as engineering work is completed. The first section should open in 1979 and the Metro will then open in sections until the whole system is in operation in 1981.



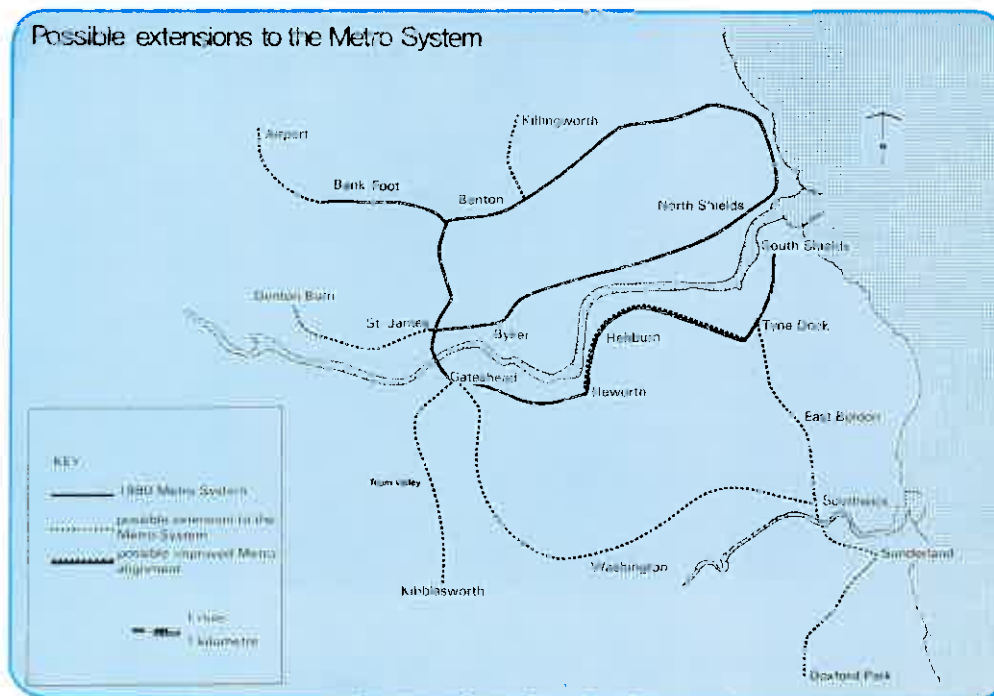
Haymarket—shown here in an artist's impression—will be one of the first Metro Stations brought into use.

Planned opening dates are:

Phase 1	Haymarket—Benton and Haymarket—Kenton Bank Foot	Spring 1979
Phase 2	Benton—West Monkseaton	Spring/Summer 1979
Phase 3	West Monkseaton—Tynemouth	Autumn 1979
Phase 4	Haymarket—Heworth	Spring 1980
Phase 5	Tynemouth—St. James	Summer 1980
Phase 6	Heworth—South Shields	Spring 1981

Plans have been made for extensions to the Metro system and whilst these may not happen for sometime, the initial system provides a sound base for future expansion.

Possible extensions to the Metro System



# Metro Construction and Introduction

Building Metro is the biggest project of its kind seen in this country. It's bound to take time to build new stations, tunnels and bridges and also install the signalling, overhead wires and train control equipment. 90 new Metrocars are also being built in Birmingham to work the system. A great deal of the civil engineering work has now been done with hardly any disruptions to the existing train service. But as building and fitting-out progresses there will have to be closures of some sections of track before Metrocars can start running. During these closures replacement buses will be provided for rail users and journey times should only increase slightly. Of course when Metro opens journey times will be improved and a much wider range of destinations will be possible.

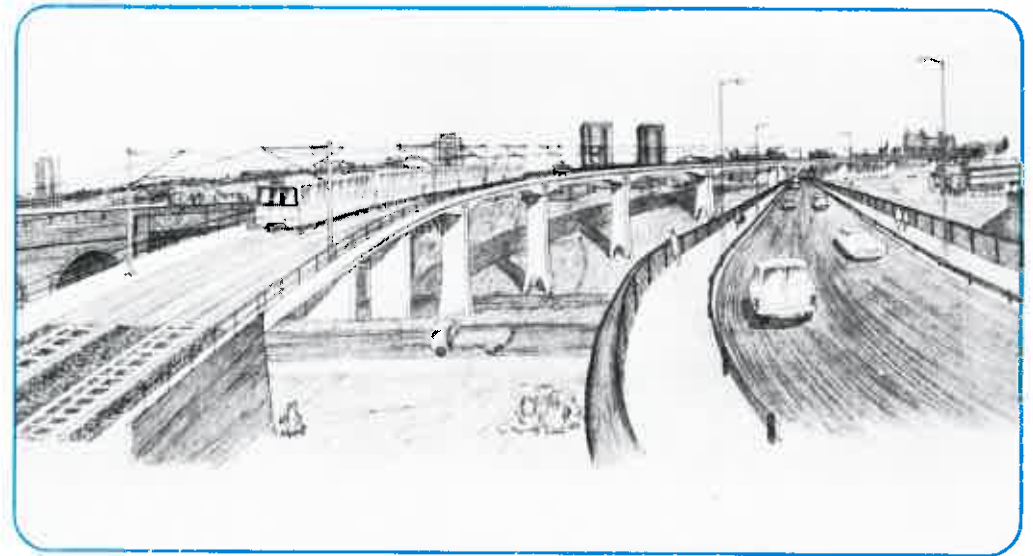
The availability of an existing rail network ripe for investment means that much of Metro's route is already there. A large proportion of the money available is therefore being spent on the heavy engineering works in the central area where tunnelling started in October 1974. The twin tunnels from Jesmond to the Tyne and under Gateshead are now almost complete and construction of the new bridge over the river and the new Viaduct at Byker are well under way.

The tunnels under Newcastle are being driven through boulder clay. They are then lined with cast iron or concrete segments. South of the river the tunnels are also being bored mechanically, but through sandstone and excavated coal seams. Here old mine workings, some dating back to the Middle Ages, had to be filled before tunnelling started.

Metro will cross the River Tyne on a steel girder bridge 24.6 m. (81 ft.) above water level at high tide to allow unrestricted passage for shipping. The 164.6 m. (540 ft.) span will be the largest on the river.

The Byker viaduct will cross the Ouseburn valley at a height of 30 m. (98 ft.) and be 820 m. ( $\frac{1}{2}$  mile) long and will have 18 spans. The longest of these will be 69 m. (226 ft.).

Monument station is a civil engineering triumph in itself. Twin-track tunnels of the north-south and east-west routes will cross here at the very heart of the City, with direct access between the station and Eldon Square shopping centre.



*An artist's impression of the New Byker Viaduct.*



*Building Metro is bound to cause some disruption but great effort is made to keep this to a minimum.*

# Metro Construction and Introduction



*There will soon be six bridges across the Tyne. The new Metro Bridge is shown in the centre of the picture.*



*Some of the first building work on Metro was construction of tunnels under the motorway—like this one at Jesmond.*



*Temporary track is laid in the tunnels for removing skip loads of soil.*



*Work on the Metro tunnels is now nearing completion.*



*After the tunnels are bored a lining is fitted—in this case cast-iron segments.*

# Metro's proving Ground

To try out the whole range of Metro's equipment a Test Centre, with 2.4 km. (1½ miles) of track has been built at Middle Engine Lane, north of the Coast Road. The Test Track has a section of 1 in 25 gradient, a 100 m. (328 ft.) long artificial tunnel and a section of curves of different radii to simulate the conditions to be experienced in operation. There is also a maintenance workshop, a control room and staff accommodation.

Since June 1975 two prototype Metro cars, built by Metro-Cammell Ltd. of Birmingham, have been on trial at the Test Centre. Tests of different components have allowed evaluation of the best designs under working conditions and test results have been very encouraging.

At a later stage the Test Centre will serve as a training ground for the first staff to operate Metro—and it will have another important role to play. Britain has entered the world market for super-trams and other urban rail vehicles and British manufacturers will use the test track to try out Metro-type cars for export. The cars for Hong Kong Metro will be the first, in 1978. Already hundreds of

visitors from transport organisations all over the world have visited the site to see what Britain has achieved in this rapidly-developing market. The prototype cars are showcase exhibits and the Test Centre itself is the proving ground for a bigger and better showcase—your Metro.

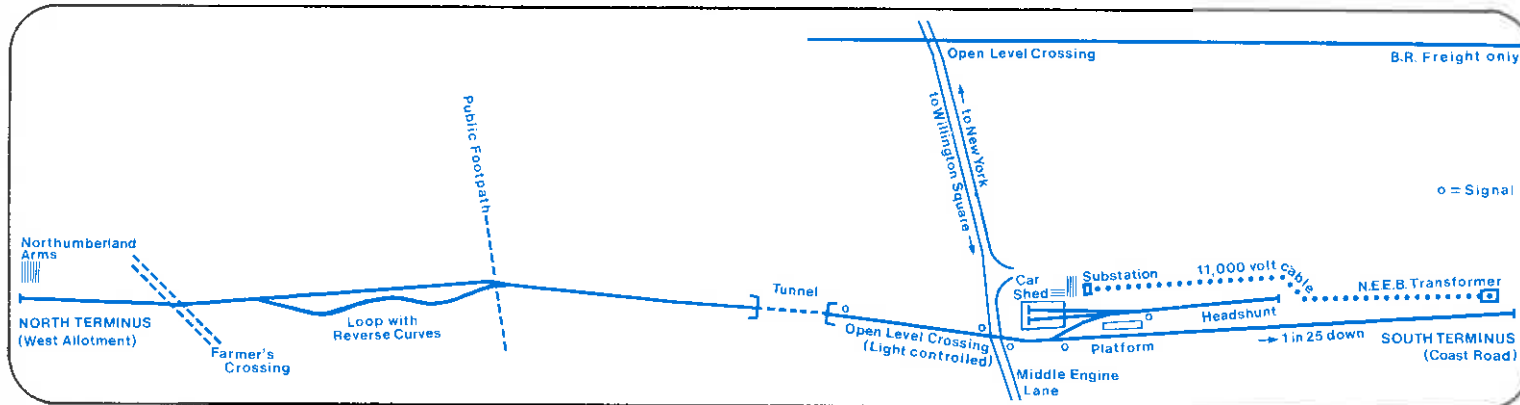


The Car Shed at the Test Track.



Different types of track bed are being tried out at the Metro Test Track.

Diagram of Metro Test Track.



This diesel locomotive is used for pulling work trains at the Test Track.

# Metro — Part of your Heritage

The Tyne and Wear Metro is Britain's first. It continues in the great pioneering tradition of our railways. These were invented in North East England and the first suburban electric system was also built here. But Metro is a special kind of railway, and in many senses it's not really a railway at all.

Let's take a closer look:

Metro combines the best of modern urban railways with the technology of modern continental tram systems.

Metro is a high-quality transport system.

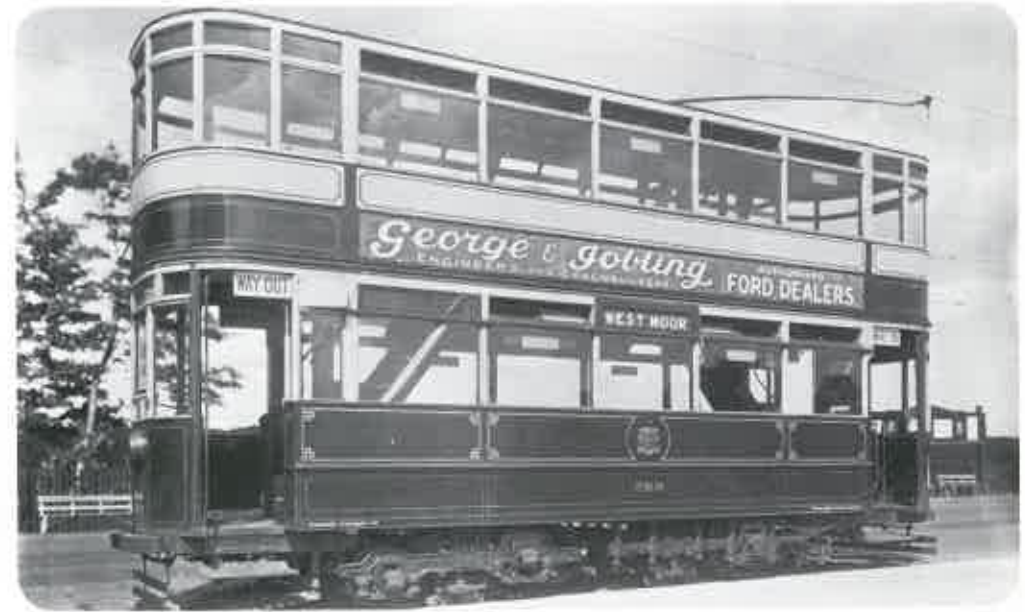
It's designed to carry up to 20,000 passengers every hour in each direction. Metro services will travel at a top speed of 80 km/h. (50 m.p.h.) and the rapid acceleration will allow a high average speed to be maintained. Unlike the private car and buses, Metro will not be held up by traffic congestion. It will transport you speedily and reliably about Tyne and Wear and right to the centres of Newcastle and Gateshead.



One of the prototype Tyne and Wear Transport Metrocars.



Electric power is not new to the area. It was used on the old South Shields trolley bus network.



An old Newcastle Corporation tram photographed in 1927.

# Remember Metro Means

- Fast travel throughout the area
- Top-quality service
- High standards of comfort
- Use of proven technology
- A massive boost to the economy of Tyne and Wear