A90 East of Perth Park and Ride

Non-Technical Appraisal Overview Report

1. Introduction/Background

1.1 Tactran's RTS identified as an early action the requirement to develop a series of sub-strategies. One of these sub-strategies is the Tactran Park and Ride Strategy and Action Plan.

1.2 The Tactran Park and Ride Strategy and Action Plan identifies and prioritises a series of Park and Ride sites and proposals for the Tactran area. One of the high priority sites identified is for the A90 East of Perth Corridor.

1.3 Other related work pertinent to this study is the Perth Area Transport Study. This major review of transport issues in and around Perth City has identified that a major road based infrastructure solution; a Cross Tay bridge and link road from the A9 north of Inveralmond to the A94 north of Scone, returns the highest benefits relative to investment costs. However, the infrastructure works proposed include Park and Ride facilities as well as an associated package of pedestrian, cycling, bus priority and public realm improvements in the city centre.

1.4 Given this background, Tactran, in partnership with Perth & Kinross Council, commissioned consultants Atkins to provide a technical appraisal for a Park and Ride facility at A90 East of Perth Corridor adopting a Scottish Transport Appraisal Guidance (STAG) type methodology.

1.5 This Overview Report provides a non technical summary of the technical STAG type report produced by Atkins. If the reader requires further details on any aspect of this report, in the first instance they should be guided to the Atkins report available at www.tactran.gov.uk.

Study Process

1.6 In line with STAG, the process was undertaken in three phases: Pre-Appraisal; Initial Appraisal and Detailed Appraisal.

1.7 The pre-appraisal undertook a review and analysis of problems and opportunities, including a review of all work undertaken for A90 East of Perth Park and Ride facility during the Park and Ride Strategy development and an environmental review. The study planning objectives were also developed at this stage.

1.8 The initial appraisal considered the options for a Park and Ride facility and assessed them against the study planning objectives and their implementability and identified an option to be taken forward for detailed appraisal.

1.9 The detailed appraisal developed the preferred option for a Park and Ride facility including detailed demand forecasting, bus operations, engineering and access, and bus priority and assessed this against the study planning

objectives and the Government's five STAG objectives of Economy, Environment, Safety, Integration and Accessibility and Social Exclusion.

2. Pre-Appraisal

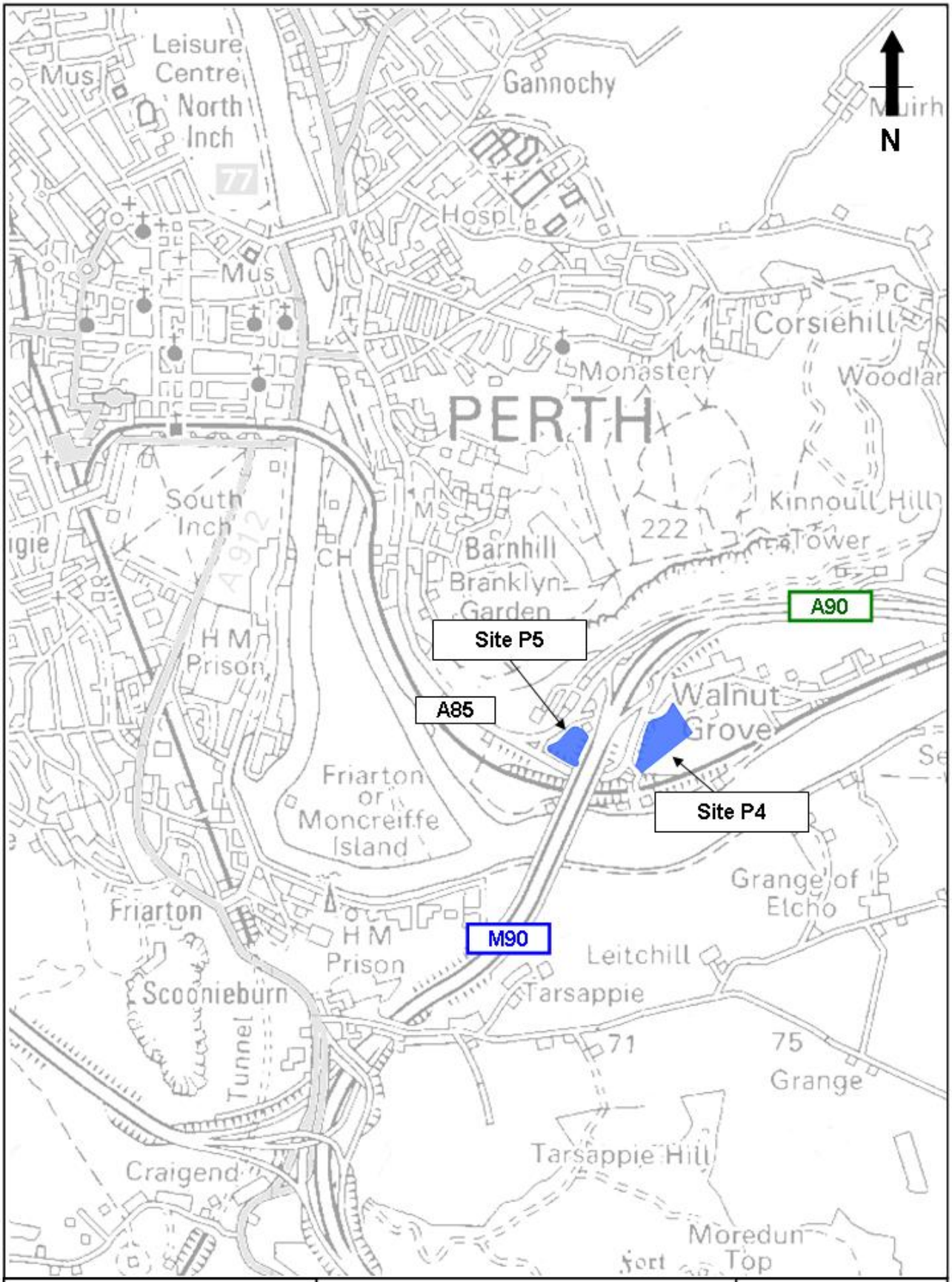
2.1 The pre-appraisal review concluded that the two sites identified in the Tactran Park and Ride Strategy, sites P4 and P5, were the sites to be taken forward to the initial appraisal phase. The location of the sites is shown within Figure 2.1.

2.2 Both sites are located in land north of the Friarton Bridge river crossing in the vicinity of the M90 / A85 road junction (Barnhill Interchange). Site P4 is located on a greenfield site, south of Walnut Grove and adjacent to the A85 Dundee Road south/westbound carriageway. Site P5 is located on a greenfield site between the south/westbound and north/eastbound carriageway of the A85 Dundee Road set within the gyratory system of the Barnhill Interchange. The A85 is a trunk road at this point.

2.3 An initial environmental appraisal was undertaken at the location of these two sites and identified that there were no environmental issues that would prevent implementation with reasonable mitigation measures in place.

2.4 The study planning objectives used to assess the likely performance of each Park and Ride proposal were developed during the pre-appraisal. These study objectives were derived from and nested within the overarching RTS objectives and Park and Ride Strategy planning objectives, but at the same time were corridor specific to the A90 East of Perth Study, as follows:

- To reduce car traffic flows on the A85 between the M90 and the centre of Perth.
- To increase levels of accessibility for all by sustainable modes from the A90 catchment to the centre of Perth and to specific employment, health, leisure and retail locations in Perth.
- To achieve high user satisfaction for users of park and ride associated with personal and vehicle security and safety.
- To increase the amount of interchange of travel between the A90 catchment area and services located in Perth centre



ATKINS

Proposed Location of Park and Ride

Figure 2.1

NTS

3. Initial Appraisal

Engineering and Access

3.1 Layout and access designs were developed for both sites P4 and P5 and these are shown in Appendix A.

3.2 Both sites were developed to accommodate approximately 240 car parking spaces with space for future expansion. Linkages for walking and cycling have also been provided where possible and space provided for passenger waiting facilities and cycle parking.

3.3 Tactran's Overnight Lorry Parking Study also recommends that Park and Ride car parks should be designed for the dual purpose of Park and Ride vehicles and to accommodate overnight lorry parking. Therefore, the site layouts have been designed to accommodate HGV turning manoeuvres.

3.4 As can be seen in Appendix A, access to site P4 will be gained via an upgraded farm access junction 160m south of the A85/ Walnut Grove junction and in principle these access arrangements are acceptable to Transport Scotland, the trunk road authority.

3.5 There is a footpath located along the southern edge of the A85 westbound carriageway that could provide pedestrian access to the outskirts of Perth, although it is too narrow for cyclists who would be required to cycle on carriageway. However, there could be good pedestrian and cycle links provided to the east via Walnut Grove from site P4.

3.6 As can be seen in Appendix A, site P5 is located within the gyratory system of Barnhill Interchange. This causes complications in accessing the site. Vehicular access to the car park would be gained via an entry only junction located below the Frairton Bridge on the inside of a right hand bend. This would mean access from the off-side fast lane of the two lane westbound carriageway. The exit from the car park would take access onto the A85 Barnhill Interchange via an improved farm access with a right in right out junction onto the off-side carriageway of the eastbound A85. The layout of both the access and egress junction arrangements would not comply with the Design Manual for Roads and Bridges and as such would not be acceptable to Transport Scotland.

3.7 The isolation of site P5 in the centre of the Barnhill Interchange also provides accessibility and safety problems for pedestrians and cyclist accessing the site as they would be required to cross a two lane carriageway with a 60mph speed limit to access the site.

Study Planning Objectives Appraisal

3.8 An appraisal of each site was undertaken set against the study planning objectives. Each site was scored on a 7 point scale ranging from –3 (major negative) to +3 (major positive). The results of the Option Appraisal are summarised within Table 3.1 below:

Table 3.1 – Study Planning Objectives Appraisal

Ref	Criteria	Site P4	Site P5
AO1	To reduce car traffic flows on the A85 between the M90 and the centre of Perth.	1	1
AO2	To increase levels of accessibility for all by sustainable modes from the A90 catchment to the centre of Perth and to specific employment, health, leisure and retail locations in Perth	2	-2
AO3	To achieve high user satisfaction for users of park and ride associated with personal and vehicle security and safety.	2	-2
AO4	To increase the amount of interchange of travel between the A90 catchment area and services located in Perth centre	1	1

3.9 It can be noted that site P4 scores significantly higher than P5 when appraised against the study transport planning objectives. The reduction in traffic volume, and the reductions in travel / interchange times experience similar results with each site.

3.10 However, it can be noted that Site P5 scores significantly lower than P4 when appraised against Objectives 2 and 3. This is based on the road safety issues that arise following the substandard geometry requirements of a new junction design and the access problems experienced by people travelling by all modes to site P5.

Implementability Appraisal

3.11 An Implementability Appraisal of Sites P4 and P5 was undertaken, the results of which are contained within Table 3.2 below.

Table 3.2 - Implementability Appraisal

Implementability Appraisal	Site P4	Site P5
Technical implementability	2	-3
Operational implementability	1	0
Financial implementability	-1	-1
Public acceptability	0	-1

3.12 Again, site P4 scores higher than P5 in technical implementability and public acceptability because of the access issues highlighted previously. Site P4 also scores higher in the operational implementability criterion because the site is located closer to a local community and buses can enter / exit the site in a less circuitous manner than Site P5 where the gyratory must be negotiated upon entry and exit.

Option for Detailed Analysis and Appraisal

3.13 The appraisal against the planning objectives shows that site P4 scores well and that P5 scores significantly lower. In addition the implementability analysis shows that site P5 scores low and in particular is not technically implementable due to the access/egress arrangements. Therefore, site P5 is

discarded at this stage with only site P4 taken forward for more detailed analysis and appraisal.

4. Detailed Appraisal

4.1 Site P4 was identified from the initial appraisal as suitable for more detailed analysis and appraisal. The analysis in the detailed appraisal process includes detailed consideration of demand forecasting; bus operations scenarios; road infrastructure and bus priority. The appraisal reported in this section of the report will concentrate on the Government's five STAG criteria of Economy, Environment, Safety; Integration and Accessibility and Social Exclusion.

4.2 Analysis

Park and Ride Demand Forecasting

4.2.1 Demand for park and ride is estimated using either a generalised cost model or through the application of intercept rates.

4.2.2 A generalised cost model compares the cost of making the same journey by park and ride and private vehicle, and estimates the number of people who will switch to the park and ride service. It considers elements such as in-vehicle journey time, parking charges, wait/walk times and bus journey times.

4.2.3 The demand forecasting undertaken within Tactran's Park and Ride Strategy utilised a generalised cost model to estimate demand at site P4 and estimated demand at 159 vehicles/day. Therefore, it was decided to validate this demand utilising the intercept rates method.

4.2.4 There are two types of intercept rates that can be used to calculate demands for park and ride; 'daily' intercept rates or those based upon the 'active' park and ride period.

Daily Intercept Rates

4.2.5 The 'daily' rates have been calculated using existing comparable park and ride sites currently in operation where circumstances are similar to those likely at A90 East of Perth, including Broxden. The usage of the park and ride site and the AADT of the nearby commuter route have been used to calculate estimated daily demand. From this method, a demand of between 155 and 210 vehicles/day was predicted at site P4.

Active Intercept Rates

4.2.6 The 'active' rates are based on using Origin and Destination (O&D) data for traffic passing the Park and Ride Site and accessing Perth city centre over the most active period of the day (7am to 3pm) and taking a typical intercept rate over this period of between 5% and 10% based on national research. Two sources of O&D data were used to calculate the likely demand – Journey to Work census data and Perth Paramics model. A demand of between 68 and 140 vehicles per day was predicted for Site P4 from this method.

4.2.7 A comparison of Demand Forecast rates is given in Table 4.1 below:

Table 4.1 – Demand Forecast Comparison

Method of calculation	Estimated daily demands for Site P4 (vehicles)	No. of passengers (1.2 per vehicle)
Generalised Cost model	159	191
'Daily' intercept rates	155 - 210	186 - 252
'Active' intercept rates	68 -140	86 - 168

4.2.8 From table 4.1 it can be seen that the Generalised cost forecast of 159 vehicles/day is towards the lower end of the 'Daily' intercept rates and slightly higher than the upper end of the of the 'Active' intercept rates. It was therefore considered that the 159 vehicles/day value was a reasonable estimate of likely demand for Park and Ride at site P4.

Abstraction

4.2.9 A survey undertaken at Broxden Park and Ride Site identified that approximately 21% of all passengers arrived at the Park and Ride site either from the A90 East of Perth or the M90 South of Perth. 21% equates to 49 vehicles per day.

4.2.10 As the overall journey would be shorter for these passengers if they used the proposed A90 East of Perth Park and Ride, rather than Broxden it is assumed that these journeys would switch to A90 East of Perth and therefore be abstracted from the current Broxden usage. Although this does not add to the total demand forecast at A90 East of Perth, it does reduce the demand at Broxden by 49 vehicles.

Bus Operations

4.2.11 Three scenarios for bus operations were considered; existing services only; new dedicated service; a hybrid mixture of dedicated and existing services. For all of these options the aim was to provide a 15 minute frequency bus service from site P4 to the city centre.

4.2.12 Preliminary discussions with Stagecoach (Perth) and Smith and Sons (operators of the Broxden Park and Ride bus service) revealed that both companies could be interested in serving a new park and ride site either by diverting an existing service (Stagecoach) or by providing a dedicated new service (Smith and Sons).

4.2.13 Details of bus services that currently pass site P4 and their frequency are given below:

Table 4.2 – Bus Services Passing site P4

Service Number / Operator / Service	Frequency
16 – Stagecoach – Dundee to Perth	Minimum 2 per hour (weekday)
53 – Stagecoach Strathtay – Coupar Angus to Perth	1 return journey (Tue / Thurs)
54b – Stagecoach in Perth – Walnut Grove to Perth	1 return journey every 2 hours (weekday)
333 – Stagecoach / NHS Tayside – PRI to Ninewells	1 return journey per hour
Megabus – Perth to Dundee	3 return journey per hour

Use of Existing Services Only

4.2.14 The benefit of utilising existing bus services that currently pass site P4 would be that there would be little or no subsidy required to service the Park and Ride site and that the overall number of buses accessing the city centre would not increase. The disbenefit would be that existing bus users would be delayed by the bus accessing the Park and Ride site.

4.2.15 However, analysis of the bus service timetables for the 16, 53 and 333 service identified that it would not be possible to service the site on an approximately 15 minute frequency through out the day, with significant gaps during the day when the Park and Ride site would not be serviced at all.

4.2.16 Although the Megabus service passes the site, given its strategic nature it is very unlikely that it would be feasible to divert the service into the park and ride site and therefore it has not been included in the timetable analysis.

4.2.17 Given the above, this scenario was discarded.

Dedicated Park and Ride Service

4.2.18 The benefit of utilising a new dedicated service is that the standard of service can be determined to be of a high standard and can be branded and marketed directly at Park and Ride users, thus increasing the likelihood of a higher demand for use. It would also increase the number of buses on the route between site P4 and the city centre, which may be of benefit to those living on the route, but could equally be a disbenefit by causing more congestion in the city centre. However, the main disbenefit of a dedicated service is the cost of subsidising the service.

4.2.19 Analysis of the existing bus timetables has identified that to maintain a 15 minute frequency throughout the day would require 2 dedicated buses during the AM and PM peak periods and one bus throughout the rest of the day. This scenario was taken forward for appraisal.

Hybrid of Existing and Dedicated Service

4.2.20 The benefit of using a hybrid service is that it minimises the subsidy likely to be required in comparison with a fully dedicated service and minimises the number of additional bus services accessing the city centre. However, a disbenefit would be that existing bus users would be delayed by the bus accessing the Park and Ride site. A further disbenefit is that the servicing of

the site would be complicated from an operators point of view (e.g. sharing of ticket revenue) and for passengers.

4.2.21 Analysis of the bus timetables reveals that one dedicated Park and Ride bus would be required throughout the day to supplement the existing 16, 53 and 333 buses which would also service the site. Even with this there would be times that the 15 minute frequency would be stretched to over 20 minutes.

4.2.22 This scenario was taken forward for appraisal.

Road Infrastructure

4.2.23 As stated in the introduction section of this paper, Perth Area Transport Study has identified a proposal for a Cross Tay Bridge and link road linking the A9 and A94. Therefore the investigation into Park and Ride has considered how it will operate under two road network scenarios:

- "*do minimum*" which includes transport infrastructure and development improvements that are considered committed, but predominantly based on the existing road network.
- "*reference*" which includes the traffic change associated with a the Cross Tay Bridge and link road linking the A9 and A94.

Bus Priority

4.2.24 Options for bus priority measures were considered as this not only provides journey time benefits for the Park and Ride bus service in comparison to car, but also improves the reliability of the bus service. Thus it makes the park and ride facility more attractive to the user, improving demand and easier to service for the bus operator.

4.2.25 A number of options were considered – bus gates; bus only lane on the A85 Dundee Road; bus only lane on the Queens Bridge; queue relocation from Queens Bridge to two lane westbound carriageway of the A85 trunk road.

4.2.26 Of the above options queue relocation combined with bus only lane on the A85 trunk road was considered to provide the best opportunity for bus priority. However, detailed analysis of this option was not undertaken and as such has not been included in the appraisal.

4.3 Appraisal

Scenarios

4.3.1 The analysis section above has outlined a number of different aspects that need to be considered when undertaking the detailed appraisal. This resulted in 4 main scenarios being tested for site P4.

- Do Minimum road infrastructure with hybrid bus service
- Do Minimum road Infrastructure with dedicated bus service
- Reference case road infrastructure with hybrid bus service
- Reference case road infrastructure with dedicated bus service

Economy

4.3.2 The cost of the Park and Ride proposal can be divided into two areas: capital infrastructure costs and revenue operating costs. Using these costs there is a requirement to appraise the economic impact of the park and ride proposal to determine the costs and benefits over a long term 60 year period. In order to do this a number of assumptions have been made.

Assumptions

(i) Year of opening of the park and ride facility is 2012.

(ii) Over the long term there is a predicted growth in general traffic and it has been assumed that the demand for park and ride will grow in line with general traffic growth. To be consistent with the Perth Area Transport Study NRTF low growth was used to growth demand between 2012 and 2031 this resulted in an increase in park and ride demand from 159 vehicles/day in 2012 to 182 vehicles/day in 2031. No further growth is assumed post 2031.

(iii) Based on Broxden surveys and in line with DMRB the number of passengers per vehicle using park and ride is 1.2 per vehicle. This will result in 191 passengers using the park and ride service, based on 159 vehicles parking at the park and ride car park.

(iv) Existing bus services utilised in the hybrid bus operations scenario will be delayed on average by 2 minutes as a result of accessing the site, more so on the outward journey where access to the site is more circuitous.

(v) As a result of 159 vehicle using the park and ride facility instead of parking in the city centre there will be lost revenue to Perth and Kinross Council through a reduction in car parking income. This is estimated at £69,152 per annum.

(vi) As noted earlier it is predicted that 49 vehicles will be abstracted from Broxden as a result of the new A90 East Park and Ride. This will result in a reduction in revenue income from fewer fares collected on the Broxden bus service. This is estimated at £17,396 per annum.

(vii) The Service 54b is currently subsidised by Perth & Kinross Council. It is considered that the park and ride service could replace this service, thereby giving a subsidy saving of £10,000 per annum.

(viii) The fare for a return journey from Perth East Park and Ride to city centre is £1.00 in line with current Broxden bus service fare.

(ix) Park and Ride users will make direct cost savings as a result of the bus fare being less than the cost of parking in the city centre.

Capital Cost

4.3.3 The estimated Infrastructure cost for the car park and access junction is **£1.473m**. This includes subsurface drainage system, site clearance, access

road, footway, landscaping, CCTV, road signs and street furniture. The cost includes 25% Optimism Bias to reflect the tendency for the true capital cost of public sector schemes to be underestimated.

4.3.4 As noted previously, in order to keep costs to a minimum it has been assumed that initially the passenger waiting facilities would be similar to those initially provided at Broxden with upgraded facilities only being provided if the site requires expansion in future.

4.3.5 It is estimated that to provide a car park with a carriageway thickness strong enough to accommodate lorry parking would cost an additional £375,000 approximately. This cost has not been included in the economic analysis, nor have the benefits associated with the park and ride car park also being used as a lorry park been captured within this analysis.

Operating Costs

4.3.6 Two sets of annual operating costs have been calculated, based on the assumptions outlined above; the hybrid bus service scenario and the dedicated bus service scenario.

4.3.7 The hybrid bus service annual operating cost is estimated at £104,117 with the annual revenue generated being £56,448. This results in the **annual bus service subsidy** required being **£47,668**. Taking into account other costs such as reduction of city centre car parking income and reduction in income from bus fares at Broxden the total annual revenue cost is £131,627.

4.3.8 The dedicated bus service annual operating cost is estimated at £175,082 with the annual revenue generated being £56,448. This results in the **annual bus service subsidy** required being **£118,634**. Taking into account other costs such as reduction of city centre car parking income and reduction in income from bus fares at Broxden the total annual revenue cost is £202,593.

Sensitivity Test

4.3.9 As the hybrid service requires the lowest annual bus service subsidy cost a sensitivity analysis was undertaken on this based on the lowest and highest demand forecast as set out in table 4.1. This results in the **annual bus service subsidy** required **ranging from £29,562** for the high demand of 210 vehicles/day **to £79,857** for the low demand of 68 vehicles/day.

Economic Impact Appraisal

4.3.10 A Transport Economic Efficiency appraisal, utilising the Perth paramics model and COBA (COst Benefit Analysis) computer program, was undertaken to determine journey time and vehicle operating cost changes, accident and casualty cost changes and environmental impacts and provide a Present Value of Cost (PVC) and Benefit Cost Ratio (BCR) for each of the 4 scenarios outlined above over the 60 year appraisal period.

4.3.11 Table 4.3 below provides a summary of the Total Cost (Present Value of Costs, PVC), Total Benefit (Present Value of Benefits, PVB) and Benefit Cost Ratio (BCR).

Table 4.3 – Summary of TEE Results

Scenario	Total Cost £ million	Total Benefit £ million	BCR
Do Minimum ('Hybrid' service)	2.859	0.274	0.10
Do Minimum ('Dedicated' service)	3.968	0.839	0.21
Reference Case ('Hybrid' service)	2.859	0.478	0.17
Reference Case ('Dedicated' Service)	3.968	1.158	0.29

Environment

4.3.12 In general the environmental effects of the park and ride facility are minor in nature and any negative impacts can be alleviated through careful design and reasonable mitigation measures. Brief details of the various environmental appraisal considerations are given below.

Noise & Vibration

4.3.13 Effects in terms of noise are expected to be neutral for access to the site and generally neutral at the park and ride site during its operation, except for three to five properties that overlook the site, where the effect is likely to be medium negative. There will also be a minor negative noise impact during construction. However, these negative impacts can be mitigated through good design and working practices.

Global Air Quality

4.3.14 The changes in CO_2 are unlikely to be significant with the overall impact likely to be neutral or minor positive, except for properties overlooking the site where there may be a minor negative impact.

Local Air Quality

4.3.15 Impacts on PM_{10} and NO_2 local air quality is considered to be neutral overall, but at most could be minor negative for residential properties overlooking the site.

Water Quality, Drainage and Flooding

4.3.16 The Tay is designated as a Special Area of Conservation (SAC). Consequently, owing to the importance of the watercourse, effects on water quality must be considered as potentially major negative, although with appropriate design measures (e.g. no discharges or drainage to the river, use of interceptors, etc), this can be reduced to neutral. Similarly for Flood Defence a potential major negative impact can be mitigated to neutral through appropriate measures.

Biodiversity & Habitats

4.3.17 The site is adjacent to the River Tay SAC and 440m to the south of Kinnoull Hill Site of Specific Scientific Interest (SSSI), but in both cases the impact is assessed as neutral, providing suitable SUDS is provided. Similarly for other habitats and protected and priority species, provided there is careful design and landscaping, the impact is assessed as neutral.

Landscape

4.3.18 Although there is an Area of Great Landscape Values (AGLV) 140m distance from the site and Ancient Woodland 270m of the site, there will be no land take from either and an initial potential moderate negative impact can be reduced to neutral through careful and sensitive design.

Visual Amenity

4.3.19 The park and ride site is located next to a major road junction and elevated section of motorway which is likely to screen some visual receptors within the Zone of Visual Influence from the site. The impact is considered moderate negative, although it is possible that with further analysis and careful design this could reduce to minor negative or neutral for some receptors.

Agriculture and Soils

4.3.20 In considering effect of Agricultural land, seedbanks and viability of holdings it is considered that the likely effect will be neutral. There is a former landfill site approximately 130m from the park and ride site, and this requires some further investigation to determine the existence, and current and historical activity of the contaminated land feature. Consequently, the impact is considered minor negative or neutral.

Cultural Heritage

4.3.21 For all aspects of cultural heritage there is potential for a moderate negative impact, however in all cases with further analysis and careful design it is likely that this would reduce to neutral.

Safety

Accidents

4.3.22 Overall there is predicted to be a slight decrease in road accidents and casualties and therefore the impact has been assesses as a minor positive.

Security

4.3.23 The aim of this sub-criterion is to assess and reflect changes in security arising from the park and ride scheme and the likely number of users affected.

4.3.24 It is expected that the Park and Ride site will be constructuted to the same standard as Broxden Park and Ride Site, adopting more up to date best practice where appropriate. However, the site locational characteristics are similar to Broxden for passive security on the outskirts of Perth. Tayside

police report no personal security issues at Broxden and as such it would be expected that Perth East Park and Ride would be similar.

4.3.25 It is predicted that there will not be any additional security problems as a result of the park and ride. Therefore the impact of the park and ride on the security of users is considered to be neutral.

Integration

Transport Integration

4.3.26 The Park and Ride Service will be designed to integrate well with existing bus services and ticketing, with best practice adopted in the design of infrastructure and the provision of information. This has been assessed as a moderate positive impact.

Land-Use and Transport Integration

4.3.27 Overall the park and ride integrates well with land use policy, namely SPP17 Planning for Transport, Regional Transport Strategy and National Transport Strategy and the Perth and Kinross Local Plan. The scheme will meet the Disability Discrimination Act, Joined Up Policy and Practice in Health and Transport, Climate Change Delivery Plan

Accessibility and Social Inclusion

Community Accessibility

4.3.28 Whilst the change in geographical coverage of the public transport system may not be significant, the increase in quality, frequency and reliability will be. Commuters, general visitors and tourists will all benefit from the introduction of a high quality park and ride facility which will increase access to jobs, services, shopping and retail facilities. Bus services that use the A85 will become more efficient, reliable and consequently more attractive if a park and ride facility is provided at Site P4.

4.3.29 Perth City Centre will be more accessible to people who live within the catchment of the park and ride facility. With education, leisure, jobs and retail facilities all being able to be accessed by people travelling by public transport.

Comparative Accessibility

4.3.30 Residents of Walnut Grove will be able to walk, cycle or drive to the park and ride facility before continuing their journey by bus. This will reduce the reliance upon and distance travelled by car.

4.3.31 The car park design will accommodate those with disabilities and offer secure parking facilities so as not to inhibit the more vulnerable members of society i.e. parents with children, the mobility impaired etc

4.3.32 The park and ride facility will benefit people living in towns and settlements on the A85, A90 and M90 road corridors. Whilst other commuter routes may experience benefits they are considered to be minor.

5. Discussion

Introduction

5.1.1 The initial appraisal stage clearly determined that site P4 to the west of Walnut Grove, located adjacent to the A90/M90 strategic road network and accessed from the A85 is the preferred site to operate a Park and Ride facility. It is well located adjacent to the strategic road network, but outside the area of congestion on the A85 approach to Perth; accessible by several modes of transport (walk, cycle, car, bus) and is allocated as a possible park and ride site in the Local Plan.

5.1.2 The forecast demand for use of this site is 159 vehicles/day or 191 passengers/day using the park and ride bus service, with this forecast to rise in line with general traffic growth over time.

5.1.3 Three bus scenarios were considered, but ultimately only two were tested as the existing bus services passing the P4 site are not sufficient to serve the Park and Ride site at the required frequency. Therefore two alternatives - a dedicated service and a hybrid of dedicated/existing services were considered.

Appraisal

5.1.4 In addition to contributing towards the study planning objectives, the Park and Ride facility was assessed against the Government's 5 STAG criteria and in general the influence on these is minor in nature. Any Environmental considerations at the site itself can be mitigated and there is likely to be a neutral to minor positive benefit in CO_2 reduction and local air quality. There is also likely to be a slight benefit in Safety, Integration and Accessibility as a result of the Park and Ride facility. However, the major consideration is in the cost and economic performance of providing and operating the Park and Ride facility

Cost/Economic Appraisal

5.1.5 The capital cost of the site is estimated at £1.473m including 25% Optimism Bias.

5.1.6 The operating cost of the bus service was estimated at £104,117 per annum, requiring an annual subsidy of £47,668 for the hybrid service and an operating cost of £175,082 per annum requiring an annual subsidy of £118,634 for a dedicated service.

5.1.7 Taking into consideration loss of city centre parking revenue and abstraction from Broxden park and ride facility among other running costs, the total annual revenue cost has been calculated as being between £131,627 and £202,593 depending upon the bus service scenario used.

5.1.8 In economic appraisal terms this manifests itself in a Benefit Cost Ratio (BCR) of between 0.10 and 0.29.

5.1.9 A BCR of more that 1.0 indicates that the overall benefits of a scheme are greater than the overall costs over the 60 year appraisal period. A negative BCR indicates that the total benefits across the transport system are reduced by the introduction of the scheme. In this instance, as the BCR is between 0.0 and 1.0, this indicates that there are benefits in implementing the scheme; however, the cost of the scheme in isolation is greater that the benefits achieved.

5.1.10 It should be noted that a number of assumptions made in arriving at the BCRs are worst case scenarios.

5.1.11 The assumption that the car parking revenue in Perth City Centre will reduce over the lifetime of the assessment does not take into account overall traffic growth and the likelihood that the spaces vacated by Park and Ride users will over time likely be taken up by other car drivers accessing the centre. It could also be the case that by reducing demand for spaces in the city centre, this may reduce the need to provide increased numbers of parking spaces or indeed permit land currently used for car parks to be used for open space or other development land-use.

5.1.12 Similarly for abstraction from Broxden park and ride facility, it has been assumed there will be a loss of 49 vehicles/day (59 park and ride bus passengers/day) over the assessment period. Again it is likely this loss will be taken up over time. It could be considered that extra spaces are being provided, without the need to expand the Broxden Site.

5.1.13 In addition to these worst case scenarios, a further consideration, that of the image and perception of Perth to tourists and visitors, is not captured by the economic appraisal. The perception that a successful park and ride operation can give to visitors is that of a vibrant city, that is also easily accessible and therefore likely to improve the city's attractiveness and benefit its overall economic performance. The most obvious example of this in the UK is York. In considering the overall benefits of a park and ride facility, the economic appraisal methodology traditionally employed through the STAG process does not manage to capture this.

Bus Operations

5.1.14 As noted above two scenarios were considered – a dedicated service and a hybrid dedicated/existing service. There are different benefits in each scenario – the dedicated service will require higher subsidy, but could provide a higher quality service; the hybrid service, though reducing subsidy, disadvantages current bus users through increased journey times and potentially could be a less reliable service than the dedicated service. However, the 333 service to PRI could have the advantage of improving accessibility to health by increasing options for accessing the hospital.

5.1.15 The estimate of £118,000 per annum to subsidise the dedicated bus operations is reasonably typical for park and ride operations offering dedicated services in the UK, with for example Broxden requiring an annual subsidy of approximately £150,000 (Source: Park & Ride Great Britain 2007, TAS Publications). This level of subsidy can only really be avoided if the frequency of existing services passing a park and ride site is 15 minutes or greater (such as at Ferry Toll) and thus avoiding the need for extra services to

5.1.16 Both of the scenarios for bus operations have only been the subject of initial discussions with bus operators and further investigations and discussions are required to identify a preferred method of servicing the site.

5.1.17 Bus priority offers the possibility of reducing journey times and increasing reliability of services for all bus services on the A90 East of Perth corridor. The study has identified an opportunity for this by relocating queuing traffic and providing a bus lane on the westbound carriageway of the A85 trunk road.

Strategy

5.1.18 Although the A90 East of Perth Park and Ride facility has been assessed on its own merits in improving accessibility to Perth, further benefits may be achieved when it is considered as part of an overall strategy.

5.1.19 The Perth Area Transport Study proposals for A9 to A94 Tay crossing and link road considers Park and Ride as an integral part of the strategy and proposes a site for the A9 North of Inveralmond, in addition to the A90 East of Perth site for bus park & ride. This is also entirely consistent with the Tactran Park and Ride Strategy.

5.1.20 However, an analysis of a co-ordinated city centre parking and Park and Ride strategy could also be considered. In general for a Park and Ride Strategy to be successful it has to be co-ordinated with a complementary city centre parking strategy. Such a co-ordinated approach can improve accessibility and attractiveness of a city in general.

5.1.21 It is also recognised the correct pricing and the availability of parking spaces in the city centre is crucial to business, retail and commercial success of the city. The introduction of Park and Ride as a viable option to parking in the city centre opens up the possibility of considering further parking scenarios. This relies on a Park and Ride being a viable option for accessing the city from all routes into the city and the introduction of the A90 East of Perth park and ride would permit greater accessibility and open up the possibility of considering other city centre parking strategies, such as:

- higher percentage of short stay high turnover spaces, relying on Park and Ride for longer stay parking.
- fewer city centre spaces, as spaces are provided by the park and ride car parks. This would free up city centre land for open space or further development.
- higher parking charges in city centre, relying on park and ride to provide a cheaper alternative.
- New developments contributing financially to park and ride facilities rather than increasing city centre parking spaces.

5.1.22 A park and ride site north of A9 Inveralmond would obviously further increase the options for accessibility and parking in Perth

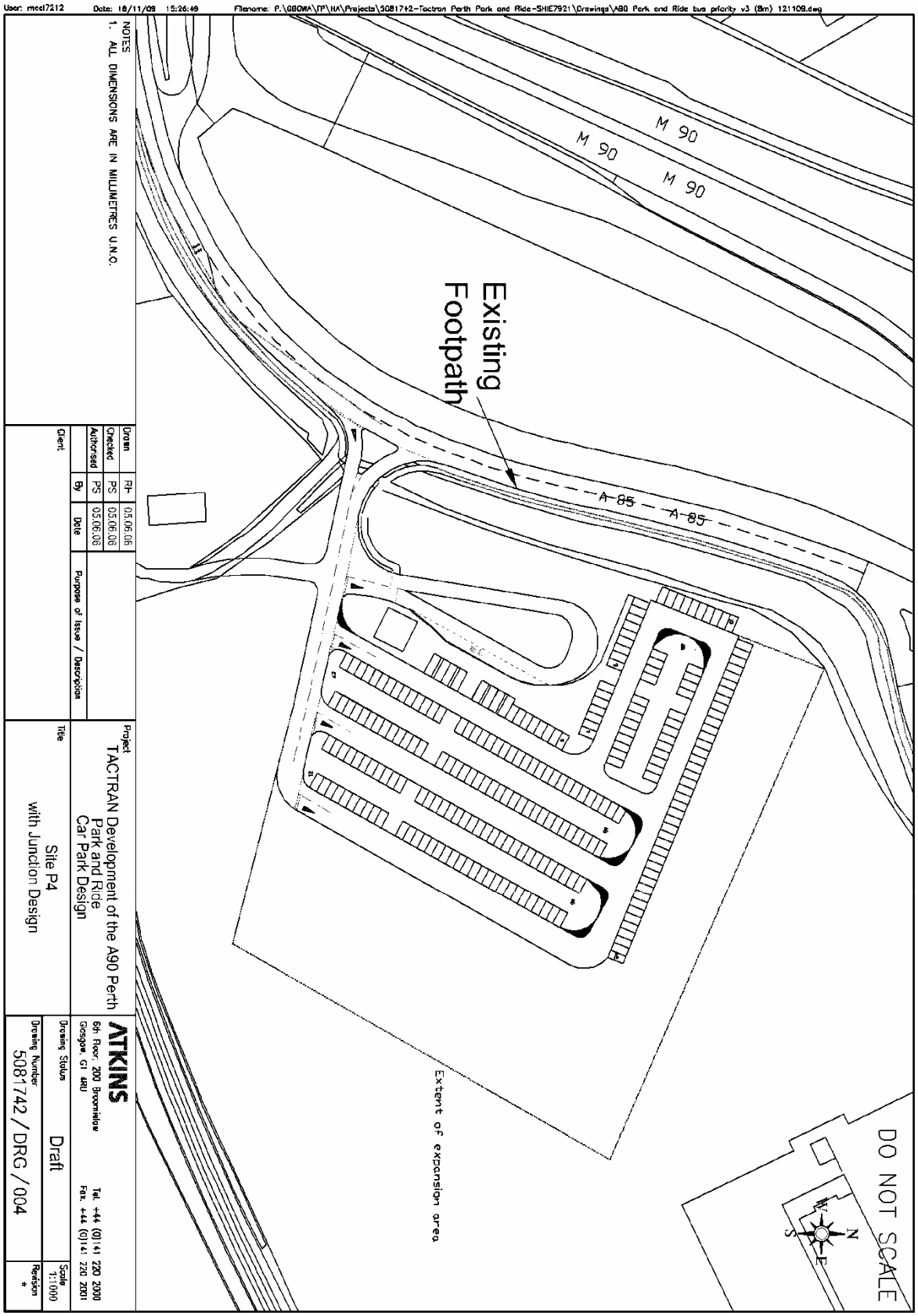
6. Conclusion

6.1.1 The A90 East of Perth park and ride facility could provide a park and ride facility serving Perth with an estimated 159 vehicle/day predicted to utilise the site. The cost of providing the site is £1.473m. However, as the existing bus services passing the site are not of sufficient frequency to serve the site as required, a subsidised service will also be required with the cost of this likely to range between £48,000 and £118,000 per annum.

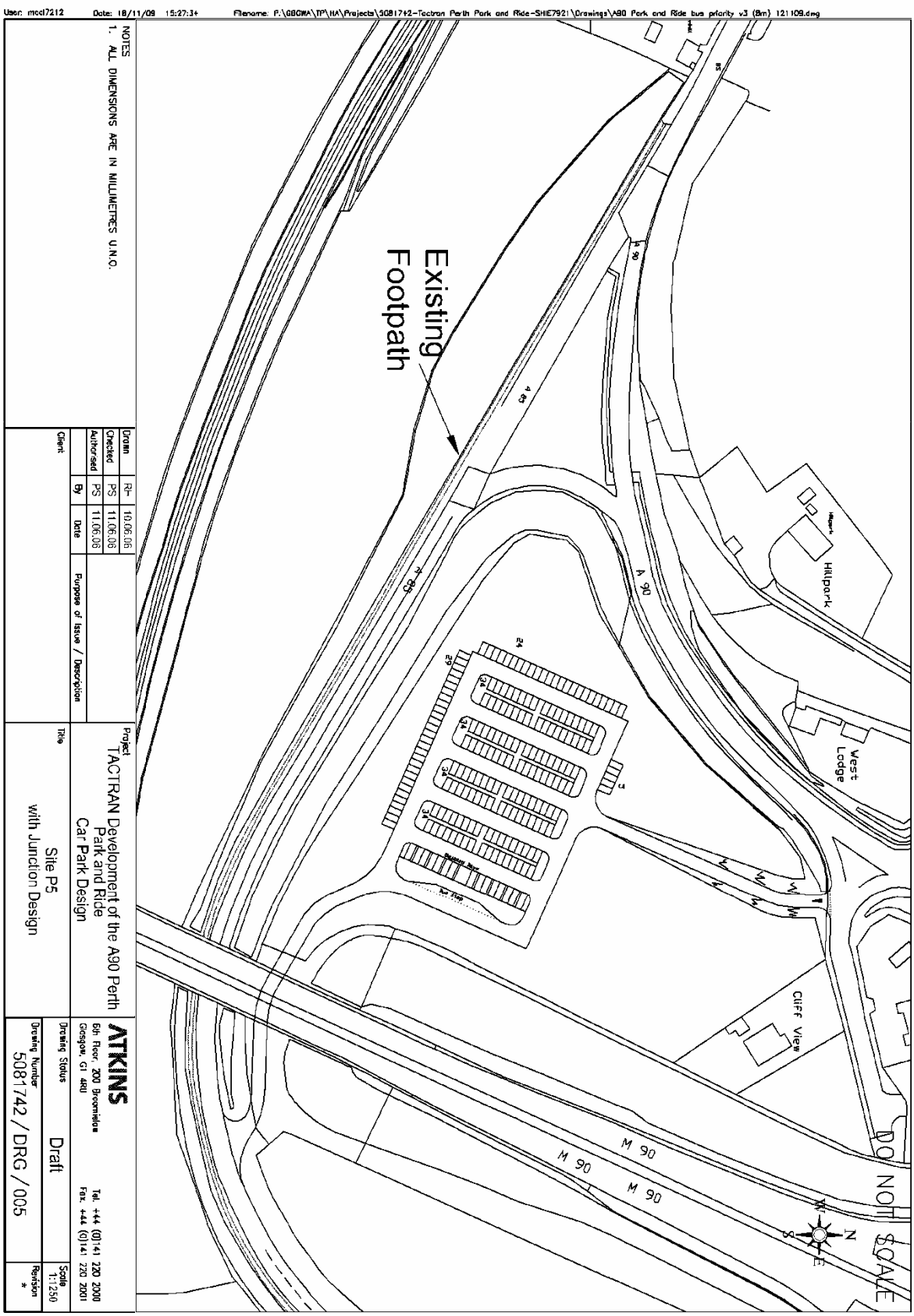
6.1.2 Consideration will be required as to when to implement the park and ride facility as its introduction as part of the Perth Area Transport Study proposals or as an overall city parking strategy are likely to increase its success and reduce the subsidy required.

6.1.3 Further investigation and progress is required regarding the bus operations, bus priority, detailed design of the car park, agreement of access arrangements with Transport Scotland, planning application, land negotiations and overnight lorry parking.

Appendix A – Park and Ride Car Park and Access Layout



Site P4 – Car Park and Access Layout



Site P5 – Car Park and Access Layout