

Intelligent Access Program – Third Generation of Access to Australia's Road Network

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IRTEENZ

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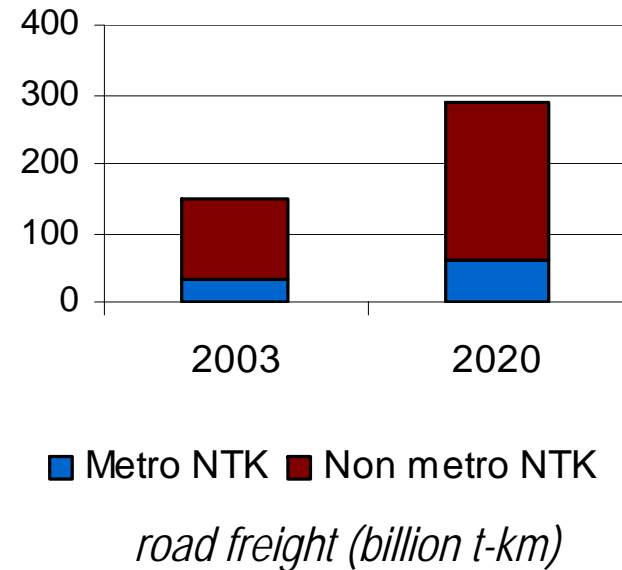


- Established (15 August 2005) as a Public Company under Corporations Act (Cth)
- Members (owners) comprise Australian, State and Territory Governments
- TCA's purpose is to serve its Members and the Community by:
 - supporting the development and implementation of the IAP; and
 - ensuring IAP Service Providers are certified and audited.
- Independent National Certification & Audit Organisation



Twice the Freight Task

- Land transport task to double (2000 – 2020)
- 1 in 4 vehicles in our cities carrying freight by 2020
- To do nothing is *not* an option
- Optimise the network solution



Freight Task Challenges

➤ Industry

- Forecast is for the freight task to increase significantly
- National and increasingly international factors
- Rapid technological change and innovation

Transport industry seeks improved access to road network



Freight Task Challenges

- Government (all levels)
 - Steward of road network (safety, infrastructure & environment)
 - Need to meet community expectations
 - Smarter compliance

Require confidence in compliance to improved conditions of access



BUT – this is also today's challenge!

- Requests for improved access
- Requests for different vehicle configurations
- Requests for additional mass

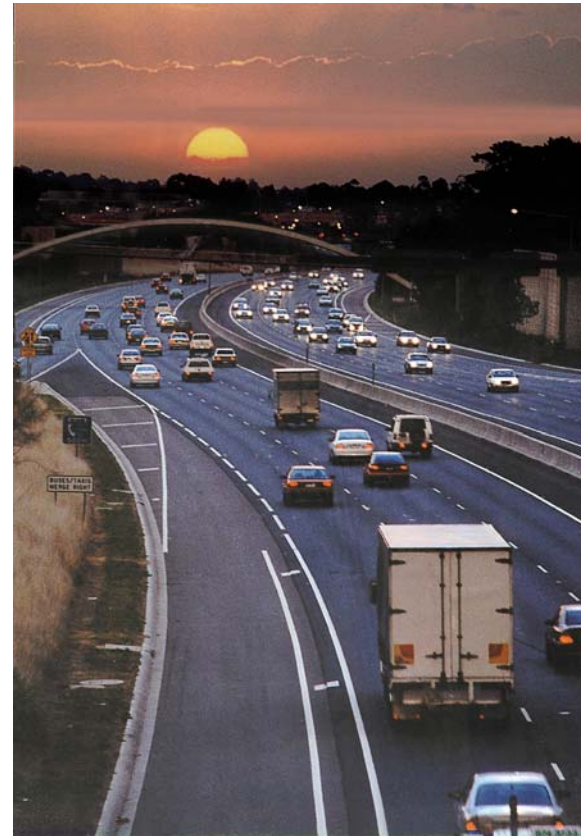


Governments Adopt a Risk Management Approach



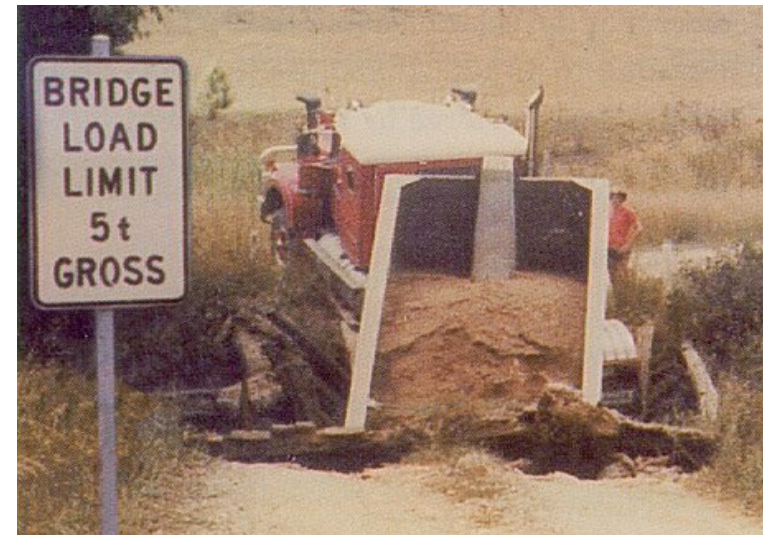
Australian Heavy Vehicle Access to Network

➤ General Access



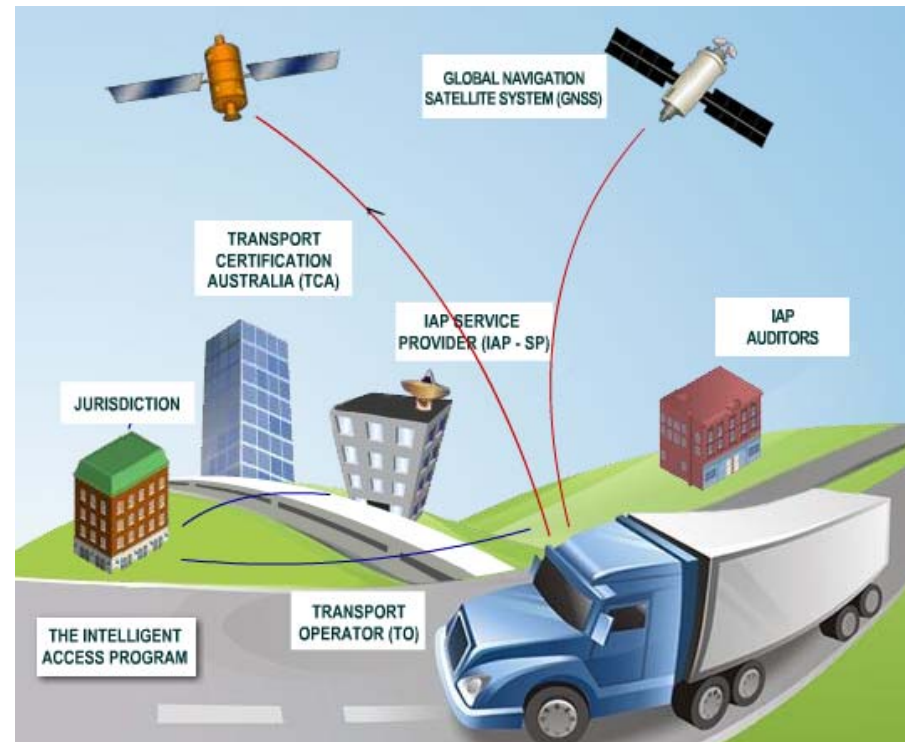
Australian Heavy Vehicle Access to Network

- General Access
- Restricted Access
 - Gazette / Notice
 - Scheme / Permit
 - Escort



Australian Heavy Vehicle Access to Network

- General Access
- Restricted Access
 - Gazette / Notice
 - Scheme / Permit
 - Escort
- Intelligent Access
 - Telematics solution using GNSS (ie. GPS) tracking





What is the Intelligent Access Program?

- A voluntary program that remotely monitors heavy vehicles to ensure they are complying with their improved and permitted operating conditions ensuring they operate how, where and when they should
- Product of a 3 year AustRoads Feasibility Project. Project team made up from Jurisdictions, researchers and telematics industry.
- IAP is a national reform 'ready' to deal with Australia's growing freight task challenge
- IAP provides a mechanism to manage the growing freight task via:
 - Improved access
 - Greater mass on combinations
 - Improved productivity
- IAP provides a 'win – win' outcome to all participants



- Administers the IAP; responds to IAP policy issues and is the steward of national issues associated with the program's operation and the certification and audits of IAP Service Providers
- TCA does not:
 - Control access to the road network
 - Identify and implement specific IAP applications
 - Negotiate jurisdictional or cross-jurisdictional access conditions
 - Determine sanctions against transport operators
- In essence, TCA is the 'wholesaler' of the IAP



IAP – Defining Principles

- ‘Intelligent Access’ would be granted based on monitoring of vehicular parameters for compliance (eg. route compliance)
- Recognition that transport operators are increasingly using telematics and telematics service providers for commercial purposes
- IAP services (along with commercial telematics services) to be provided by the private sector – Public Private Partnership (PPP)
- Strict compliance to highest order Privacy Principles & data security
- Jurisdictions interested in exception reporting
- Underpinned by legislation in each participating jurisdiction
- Consistent approach in processes across all jurisdictions



Participants in the IAP

- **Jurisdictions, who:**
 - establish IAP Applications either through public announcement or via negotiation with specific Transport Operators (TOs);
 - grant Interim IACs and IACs to TOs;
 - administer an IAC during its life; and
 - receive and interpret non-compliance reports from an IAP-SP that provide details of a TO's non-compliance with their conditions of access (IAP Conditions).



Participants in IAP

- **Transport Operators who:**
 - operate one or more vehicles and who may be eligible to enter an IAP Application;
 - apply to join IAP Applications which satisfy their business requirements;
 - engage an IAP-SP on a fee-for-service basis to monitor their vehicle's performance against the IAP Conditions and issue non-compliance reports (NCRs), as necessary, to the Jurisdiction (whilst optionally engaging them for additional fleet management services);
 - operate under IAP Applications, abiding by the IAP Conditions as outlined in the IAC(s); and
 - exit from an IAC either because the IAC has ceased, the TO or IAP-SP requests a cancellation and/or the Jurisdiction makes a determination to cancel the IAC.



Participants in IAP

- IAP-SPs, who:
 - undertake certification and on-going auditing by Transport Certification Australia (TCA);
 - provide IAP services to TOs (with optional additional fleet management services); and
 - provide information to Jurisdictions in matters regarding their service provision to a particular TO such as details of monitoring equipment installations, reporting about non-compliance and interruptions to service.

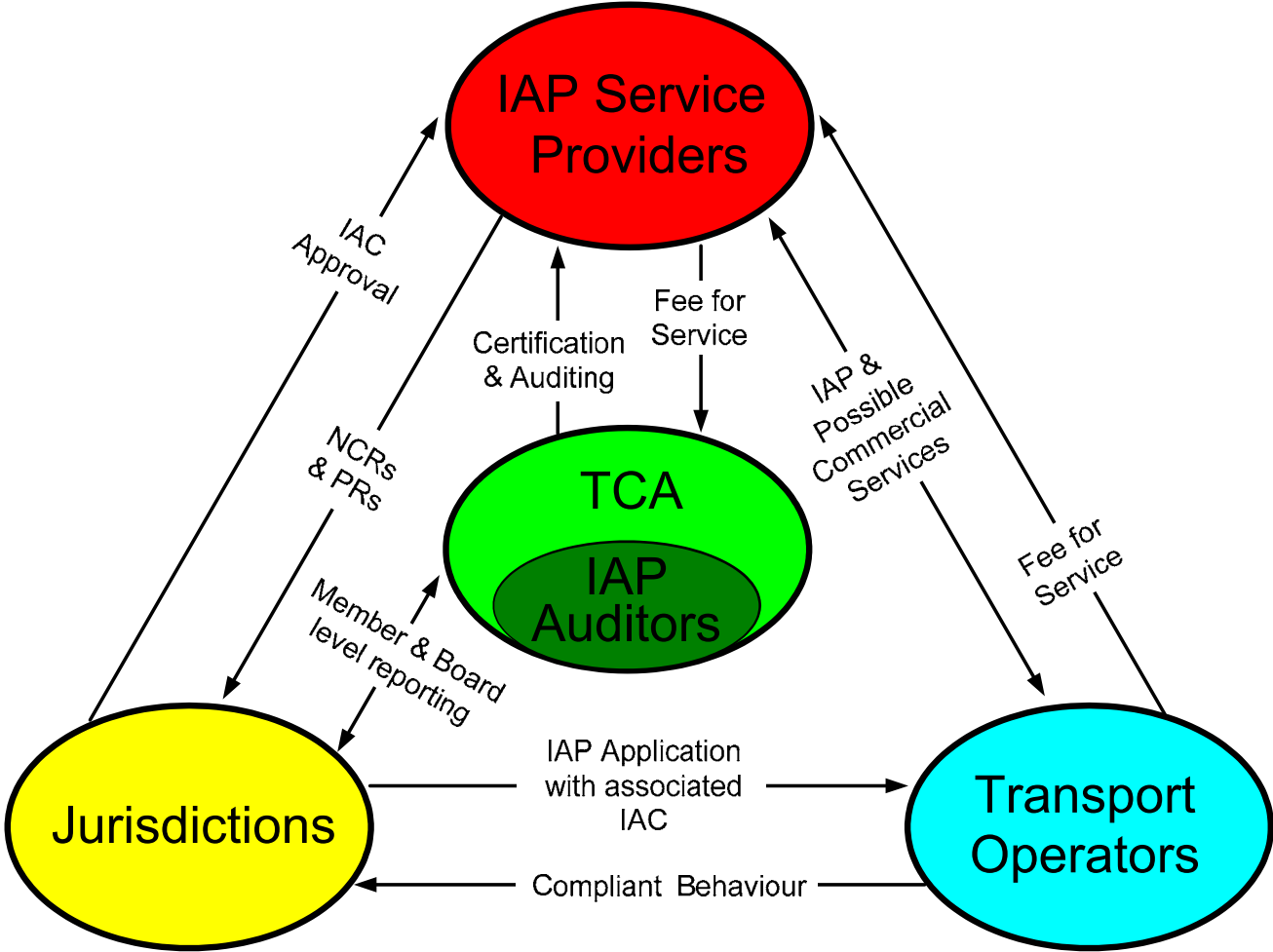


Participants in IAP

- **Transport Certification Australia who:**
 - ensure that IAP-SPs are certified and audited;
 - facilitate communications within the IAP.



IAP Operating Model



Established (Transitional) IAP Specific Applications

Mobile Crane Concessional Benefit Scheme



Above: Innovative Vehicle - Queensland

Left: Class 3 Cranes VicRoads



Proposed Mass – Market IAP Application

- Queensland and New South Wales expanding their respective Higher Mass Limit (HML) route networks
- For example B-double (configured for HML) would be eligible for enhanced access to the HML road network.
- Provides increased access for HML vehicles (significant productivity gain)
- Provides for demonstrated compliance
- Future Linking to IAP & SDF



- Jurisdictions pay for services provided to them by TCA
- IAP Service Providers will pay for their
 - certification
 - on-going review and audit
- These fees are not payable by transport operators
- Transport operators need to negotiate any fees with their chosen IAP Service Provider (including any commercial services)



IAP Benefits

- Road authorities can use the IAP to better manage their respective road network and provide for the growing freight task
- IAP can provide enhanced access to the road network
- Can provide for improved safety, infrastructure and environmental management
- Can better manage the expectations of the community
- Can provide for improved productivity
- Commercial decision to determine if the benefits of joining an IAP Application outweigh the costs of participation
 - In essence, road authorities are ‘retailers’ of the IAP



IAP - An 'Enabler' for Reform

- Contract management tool
 - government can oversee and audit performance of service contracts
- Review of concessions
 - allows concessions to be structured and better targeted
- Respond to community concerns regarding certain kinds of transport operations
 - supports cooperative solutions to transport problems and issues
 - fosters partnerships between government and industry
- Enabler providing a platform for emerging public policy issues



In Vehicle Monitoring Equipment

- **In Vehicle Unit (IVU)**
 - Type Approved by TCA
 - Incorporates:
 - GNSS Receiver, antenna, all cabling and connections
- **Trailer Identification Device (TID) - if applicable**
 - Type Approved by TCA
 - Level 2 Certification only
- **Human-Machine Interface – IVU (PDA or like)**
 - Entry of SDF Information into the IVU if required



IAP Applications – 2 types

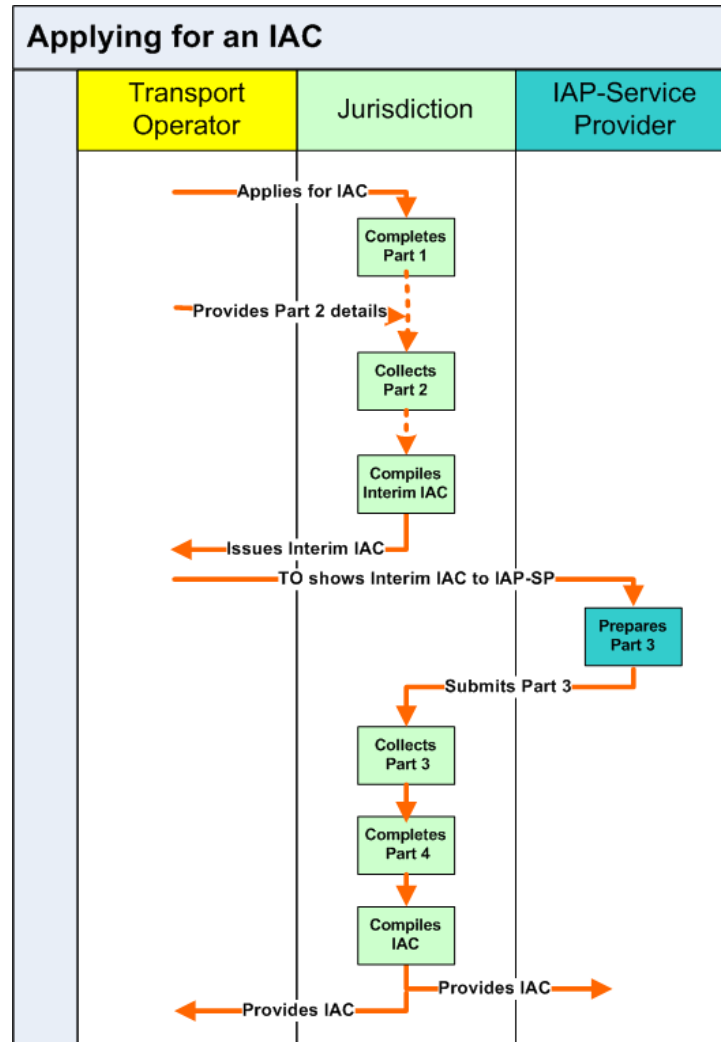
Off-the-Shelf IAP Applications	Unique IAP Applications
Developed for widespread use.	Generally created in response to a TO's request; limited take-up anticipated.
Published publicly.	Generally NOT published publicly.
Selected by a TO and approved by a Jurisdiction.	Requested by a TO and designed by a Jurisdiction to meet the unique needs of the TO.
<p>IAP Conditions self-contained and maintained independently. They are referenced from the IAC by use of an identifier (Off-the-Shelf IAP Conditions ID). This reference will always be to the most current revision of those Off-the-Shelf IAP Conditions.</p>	IAP Conditions described in full detail within the IAC.



- Transport Operator brings a particular need or application to the Jurisdiction
- Flexibility given to Jurisdictions at time of creating the Intelligent Access Conditions (IACs)
 - Access routes where the TO may or may not travel – Spatial conditions
 - Time restrictions – Temporal conditions
 - Speed conditions – Threshold into the IVU
 - Self Declaration Functionality – Configuration / Mass / Comments



IAC Application Process



Intelligent Access Condition (IAC)

Unique IAP Conditions – background

Background to be set at (select **ONE** only):* Inclusion Exclusion

Unique IAP Condition 1 – route or zone condition with associated temporal conditions

Spatial Condition 1 with associated Temporal Condition:

Access applies to : (select **ONE** only) Route Zone

Type of condition (select **ONE** only):* Absolute-inclusion Exclusion Inclusion

Route/Zone access description: Identifying Persistent IDs:

Wyndham Street (Goulburn Valley Highway), Shepparton. Between Midland Highway & Brauman Street.

First Link - Start lat/long (optional): Last Link - End lat/long (optional):

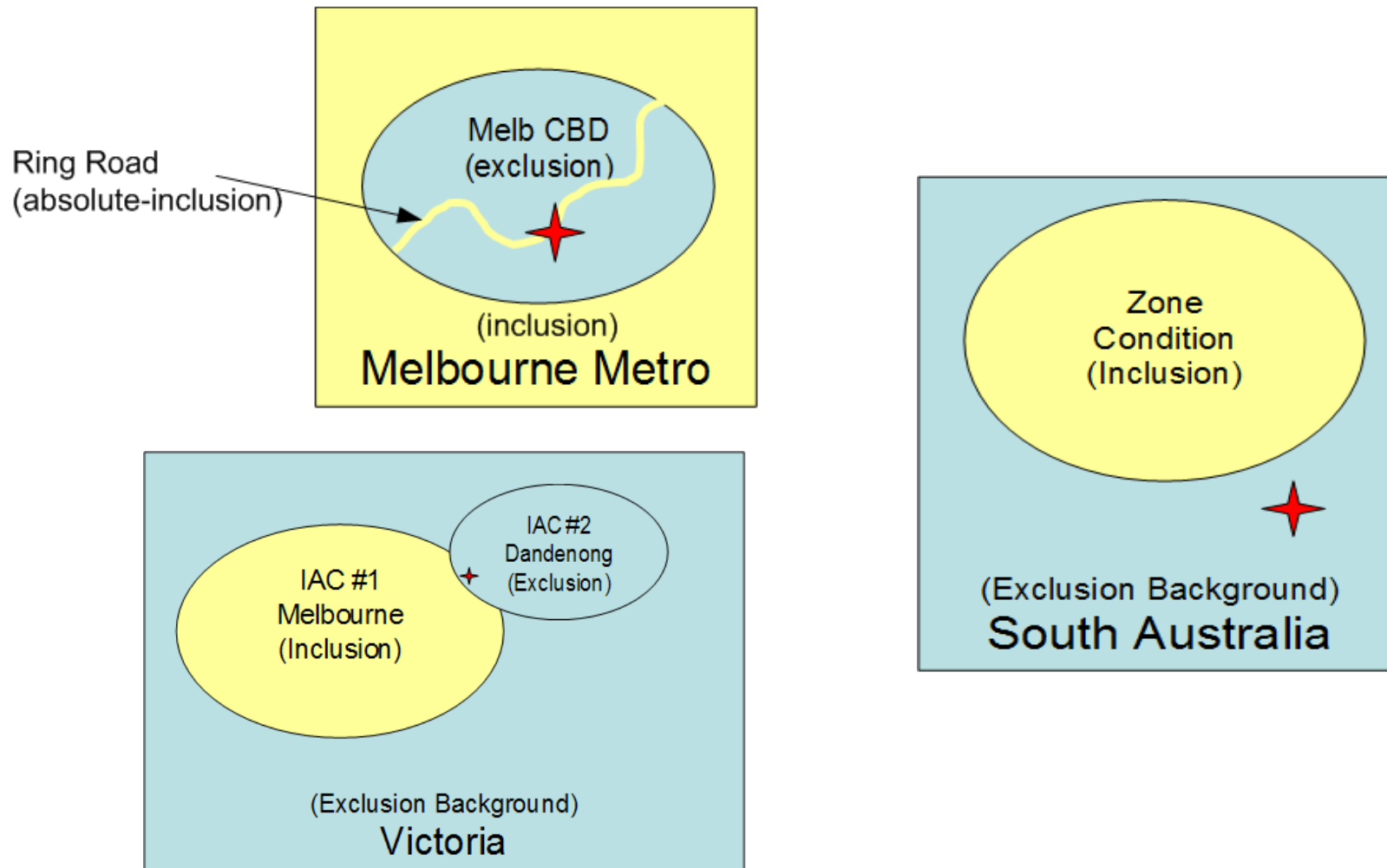
If there is a time limitation associated with this route or zone condition provide details below:

Every day	Weekday	Weekend	Mon	Tue	Wed	Thu	Fri	Sat	Sun
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

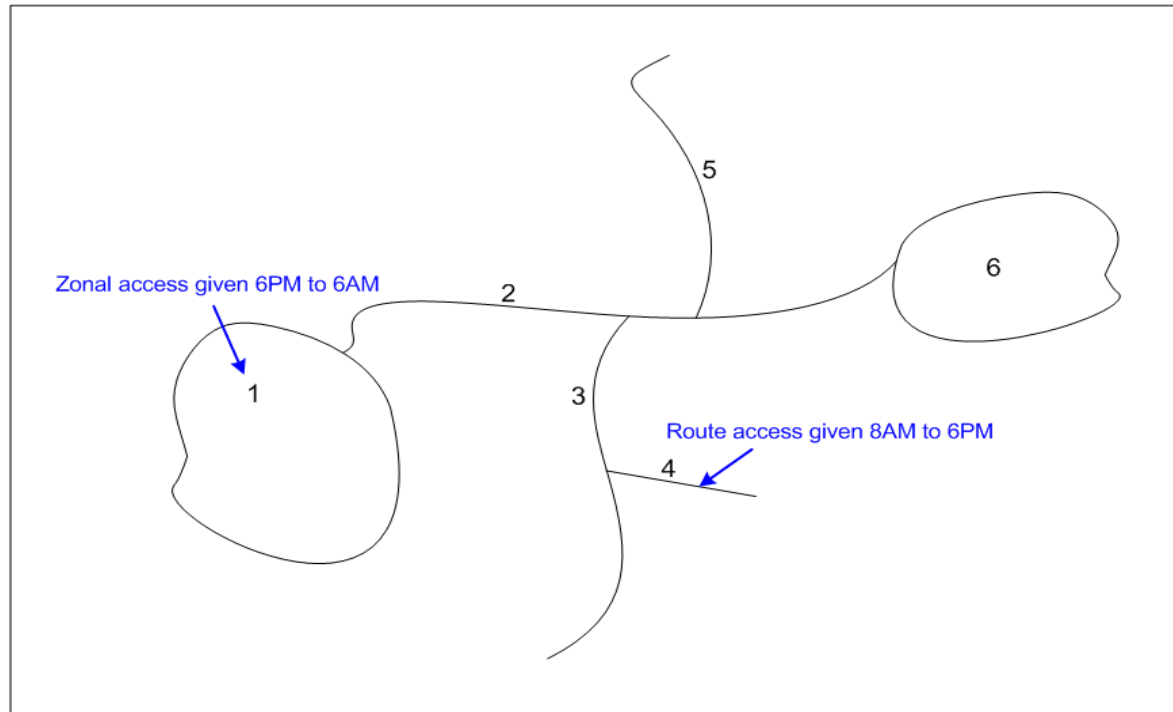
Start Date and Time	End Date and Time	and/or	Start Time 1	End Time 1	Start Time 2	End Time 2	Start Time 3	End Time 3	etc...



Routes / Zones & Hierarchy



Spatial & Temporal



In this example there are six spatial conditions (Inclusion) combining to form an access area.

Two of them are qualified by a temporal condition (1 & 4).
The other four conditions apply 24/7/365.

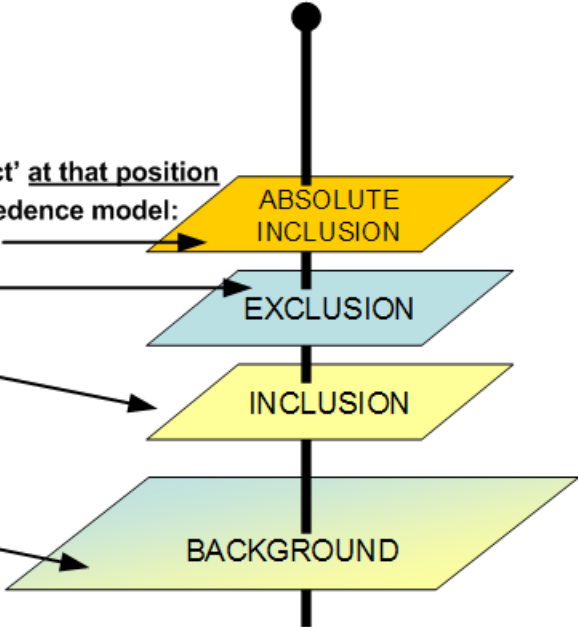


- Identify the vehicle's position
- Sort all **spatial conditions** to identify those which are 'in effect' at that position
- Assess against these 'in effect' conditions using the precedence model:
 - if there is an absolute-inclusion condition \Rightarrow compliant \Rightarrow STOP
 - if there is an exclusion condition \Rightarrow non-compliant \Rightarrow STOP
 - if there is an inclusion condition \Rightarrow compliant \Rightarrow STOP

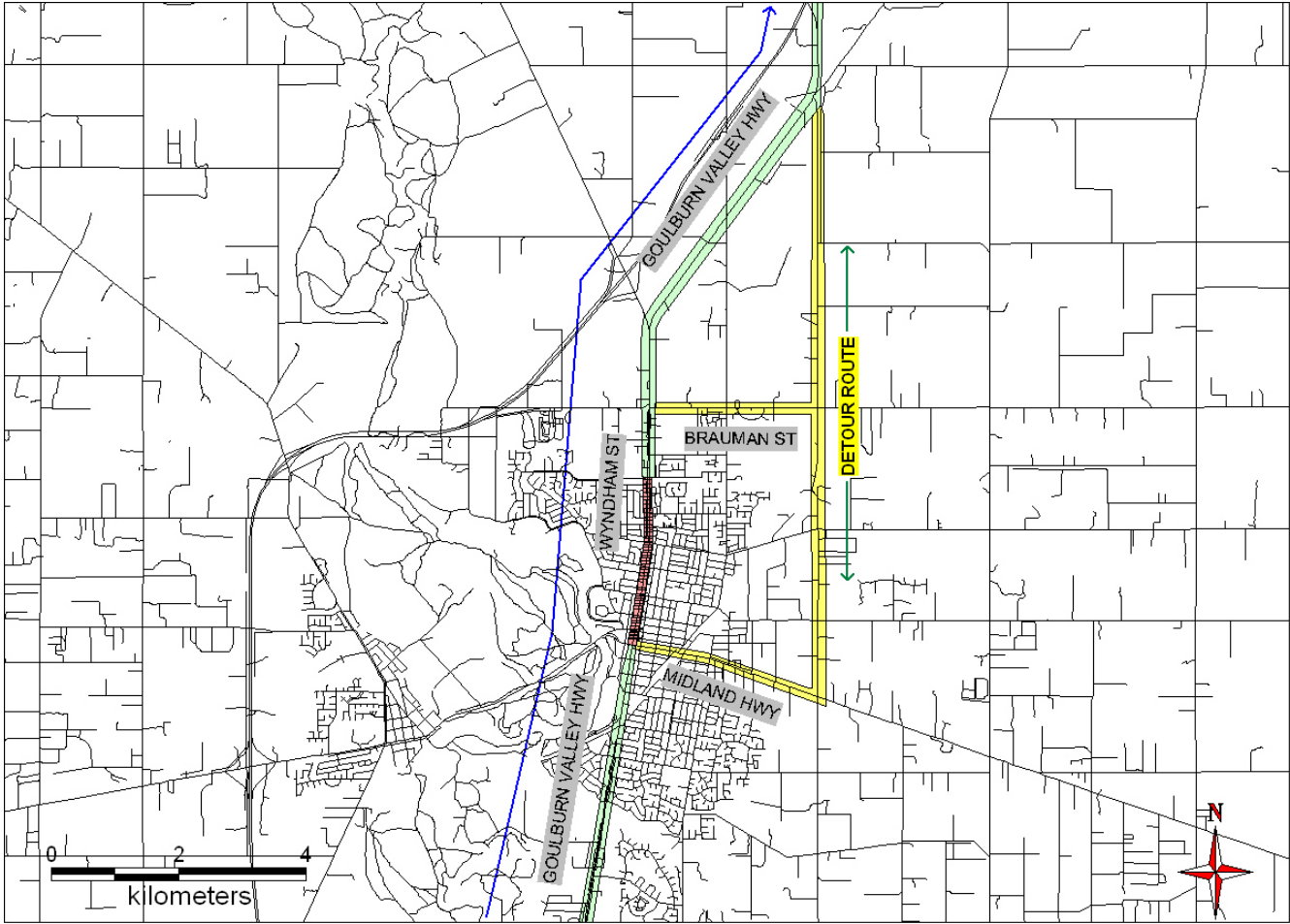
No decision yet?

Consider the **Background!**

- Inclusion \Rightarrow compliant \Rightarrow STOP
- Exclusion \Rightarrow non-compliant \Rightarrow STOP



Route Compliance Example



Intelligent Access Condition (IAC)

Unique IAP Conditions – background

Background to be set at (select **ONE** only):* Inclusion Exclusion

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Route/Zone access description: Identifying Persistent IDs:

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First Link - Start lat/long (optional): Last Link - End lat/long (optional):

If there is a time limitation associated with this route or zone condition provide details below:

Every day	Weekday	Weekend	Mon	Tue	Wed	Thu	Fri	Sat	Sun
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Start Date and Time	End Date and Time	and/or	Start Time 1	End Time 1	Start Time 2	End Time 2	Start Time 3	End Time 3	etc...
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Non-Compliant Position Records

- Position Records in Wyndham Shepparton

Position Record #	UTC	Position		Direction	HDOP	Num Sat	Ignition switch	Movement sensor
		Lat	Long					
245	01:40:16	-36.38113	145.39959	106.9	1.3	7	On	Movement
246	01:40:46	-36.38003	145.39953	7.2	1.3	7	On	Movement
247	01:41:16	-36.37824	145.39989	9.6	1.4	5	On	Movement
248	01:41:46	-36.37456	145.40062	9.0	1.3	7	On	Movement
249	01:42:16	-36.37378	145.40077	9.9	1.3	7	On	Movement
250	01:42:46	-36.36979	145.40158	7.3	1.3	7	On	Movement
251	01:43:16	-36.36566	145.40204	356.9	1.3	7	On	Movement



- Spatially non-compliant

Nature of the non-compliant activity

Non-compliant activity (*select ONE only*):

Spatial
 Temporal (which also implies spatial)

Speed
 Alarm

Summary of the Spatial, Temporal or Speed non-compliant activity

Non-compliant activity began: (Local jurisdiction time)	12:40:46 18/02/2006
(UTC time)	01:40:46 18/02/2006
Initial Position:	Latitude -36.38003 and Longitude 145.39953 (decimal °)
Non-compliant activity ended: (Local jurisdiction time)	12:42:46 18/02/2006
(UTC time)	01:42:46 18/02/2006
Final Position:	Latitude -36.36979 and Longitude 145.40158 (decimal °)
Total duration of the Non-compliant activity was:	00 hours 02 minutes 00 seconds



Monitoring for IVU Alarms

Alarm Code	Alarm Description	Alarm Record Type
1	External IVU power supply disconnected	
2	External IVU power supply reconnected	
3	No power supply to IVU - Vehicle movement indicated by ignition	1
4	No power supply to IVU - Vehicle movement detected by other independent movement sensor	1
5	Ignition disconnected	1
6	Ignition reconnected	1
7	Other independent movement sensor disconnected	1
8	Other independent movement sensor reconnected	1
9	Unauthorised access to data in IVU detected	1
10	Unauthorised access to IVU software detected	1
11	GPS antenna disconnected	1
12	GPS antenna reconnected	1



Monitoring in the Control room

51	Position Record numbering not in sequence	2A
52	Alarm Record numbering not in sequence	2A
53	Speed Record numbering not in sequence	2A
54	Data Record time information increases not in sequence	2A
55	No GPS satellite signal used for a period of five or more minutes while the vehicle was in operation and moving	2A
56	No GPS satellite signal used for a period of five or more minutes and the distance between the last valid Position Record and the next valid Position Record exceeds 500 metres	2A
57	Less than 4 satellites used for a continuous period of 30 minutes, while the vehicle was in operation and moving	2A
58	Less than 4 satellites used for more than 20% of the time over a period of 100 hours, while vehicle was in operation	2A
59	No data transfer from the IVU within 72 hours	2B
60	Data incompleteness, inconsistency and errors	2B
61	Loss of integrity and/or authenticity of data blocks	2B
62	Implausibility of incoming Position, Alarm and Speed Records	2B
63	Incomplete or inconsistent framing data	2B
64	IVU was defective for more than seven days	2B



Alarm Examples

<i>Alarm</i>	<i>Triggering event</i>
<i>Ignition disconnected (Alarm Code 5)</i>	<i>Ignition status changes from: 'On' or 'Off' ⇔ 'Disconnected'</i>
<i>Other independent movement sensor reconnected (Alarm Code 8)</i>	<i>Other independent movement sensor changes from: 'Disconnected' ⇔ 'Movement' or 'No Movement'</i>
<i>Unauthorised access to data in the IVU (Alarm Code 9)</i>	<i>Unauthorised access status changes from: 'Not Detected' ⇔ 'Detected'</i>
<i>No power supply to IVU but Vehicle movement detected by Ignition (Alarm Code 3)</i>	<i>With Power Supply 'Disconnected'; and as Ignition status changes from: 'Off' or 'Disconnected' ⇔ 'On'</i>



- A PR is generated for a calendar month in order that:
 - the Jurisdiction is notified about the identity of ALL the vehicles which have been monitored, in their Jurisdiction, by the IAP-SP over the reporting period;
 - both the Jurisdiction and IAP-SP have a means of reconciling the number of NCRs they have received with the NCRs they should have received (as per the PR) for the reporting period; and
 - TCA is notified about the number of vehicles which have been monitored by each IAP-SP over the reporting period for auditing and information purposes.



- Ongoing Review and Audit Programs:
 - TCA test and Audit Vehicle
 - Quality Monitoring Station
 - Jurisdictional Assistance
 - IAP-SP Data reviews
 - General Intelligence
 - IAP-SP Internal and External Audits
 - TCA Targeted Auditing



- *The IAP can be summarised as follows:*
 - The IAP is a national program under which IAP Applications allow enhanced access to the road network.
 - IAP Applications contain a compliance requirement ie the vehicle is independently monitored for compliance against a set of IAP Conditions.
 - IAP-SPs fulfil the independent third party monitoring role.
 - The instrument by which a Jurisdiction grants a vehicle access to an IAP Application is an IAC.
 - An IAC describes the IAP Conditions with which the vehicle must comply.



- An IAP Application (or IAP Conditions) can be either unique or off-the-shelf.
- Unique IAP Conditions are embedded in the IAC.
- Off-the-Shelf IAP Conditions exist independently and are referenced by the IAC.
- Off-the-Shelf IAP conditions may be revised (they are assigned a revision number).
- Off-the-Shelf IAP Conditions and their revisions are distributed by Jurisdictions to IAP-SPs.
- IAP-SPs have a responsibility to test Off-the-Shelf Conditions for reliability and report to the issuing-Jurisdiction.



Conclusion

- Transport Certification Australia is now established
- Its first mass-market IAP Application is being implemented
- IAP is a new compliance tool providing benefits and opportunities to all stakeholders
- Pricing is reasonable and affordable
- Roll-out - commence Service Provider certification in 2006/2007
- Applications will be accepted from 1-1-07
- TCA website:

www.tca.gov.au





Latest NEWS

▶ 31 July 2006

TCA and VTA to join forces to promote the IAP
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▶ 18 July 2006

IAP was on the agenda at the ATA Council meeting
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▶ 10 July 2006

IAP Service Provider applications set for end 2006
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Welcome to Transport Certification Australia

Transport Certification Australia Limited (TCA) was established to administer and implement the Intelligent Access Program (IAP) and to certify IAP Service Providers.

TCA will be *'Taking the IAP to Market'* later this year, subject to legislation requirements being met, and expects that the process of certifying applicant IAP Service Providers will commence by the end of 2006.

While, TCA's role is to administer the IAP and certify IAP Service Provides, the actual uses or IAP Applications are established by jurisdictions (road authorities).

Jurisdictions are currently developing their administrative systems to support the IAP, and will start implementing an IAP environment when IAP Service Providers are certified. Some jurisdictions are expected to have IAP applications sooner than others.

