ICSM ROADS WORKING GROUP

LIST OF PROPOSED FEATURES FOR ROADS DATA MODEL

Definitions of *priority*:

1. Fundamental feature or attribute currently being captured and/or maintained by government mapping agencies.
2. Fundamental feature or attribute not currently captured or maintained by government mapping agencies, but could be relatively easy to do.
3. Fundamental feature or attribute not currently captured or maintained by government mapping agencies, and would probably be too difficult for government mapping agencies to capture under existing arrangements.
4. Not a fundamental feature or attribute, but could be relatively easy to capture or maintain within government.
5. Not a fundamental feature or attribute, and would be difficult to capture by government mapping agencies under existing arrangements.
6. Feature or attribute that was considered for the data model, but deemed to be irrelevant, superseded or anachronistic.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
ROAD	A defined path for the transfer of goods or movement of vehicles, people and animals. It does not have a fixed track for vehicular movement like a railway. Can include foot tracks and cycleways. As this is for a road centreline dataset, a road is defined as a line only and not a polygon.	YES	Yes	Medium	1	Cf ferry route. Road does not have to have a physical existence; it can be defined in the cadastre only, although capture of 'paper roads' should be avoided. Addresses can exist on waterways (refer Addressing Special Interest Group) so a road feature should not just be restricted to land. Points for further consideration: does the definition need to include 'animals', cycleways or foot tracks; how does the Adelaide O-Bahn fit into this category (vs a railway).

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
BRIDGE	Structure erected over a depression or obstacle to carry traffic. Must be connected to the transport network.	Yes	Yes	Medium	1	Definition from ICSM ASTS. Can be Point or line; dependent upon scale. Point doesn't have to be at the intersection. May be separate road segment with a RoadOnType = OnBridge. Could be handled by RoadOnType, but separately stored as a point (Crossing) which carries the name, structure, limits etc.
FORD / RIVER CROSSING	A shallow or flat portion of the bed of a watercourse or lake where crossing may be effected. Must be connected to the transport network.	Yes	Yes	Hard	1	Double-check against bridge.
TUNNEL	An underground or underwater passage for a road connected to the transport network.	Yes	Yes	Medium	1	As per earlier ICSM definitions. Could be handled by RoadOnType, but separately stored as a point (eg Crossing) which carries the name, structure, limits etc

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
FOOT TRACK	Track designed to carry pedestrian traffic only (but may have restricted vehicular access).	Maybe	Yes	Medium	6	Where foot tracks have addresses they should be identified separately to other foot tracks. Requires more discussion.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
FERRY ROUTE	A route for the transfer of goods or the movement of vehicles, people and animals on water. Cf road.	Yes	Yes	Easy	1	Modelled as a separate feature to a road. May need attributes such as vehicular, passenger etc.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
ROUNDABOUT	Road segment part of an intersection designed to allow smooth integration but also slow traffic.[1] It must: - Be circular or elliptical in design; - have one-way flow; - not have names or addresses – otherwise it is a standard road segment (as per WA definition). All roundabouts regardless of size will captured or generated as a point – to allow further attributes to be attached. Where larger than 20m, captured as roads with sub-type "roundabout".	Yes	Most	Easy	2	A roundabout can have more than one lane, and can include mountable, non-mountable and turning circles (as per Tas definition) Check against RTA definitions.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
TRAFFIC LIGHT	Light mounted on or beside a road to control traffic flow. Captured as a single point.	No	No	Easy to model but often difficult to maintain.	4	A sub-type of “Traffic Control Device” (ref NSW definition of TCD). At intersections, only need one. Traffic Lights exist in most models but are often difficult to capture.
GATE	A structure that may be swung, drawn or lowered to block an entrance or passageway. Can include bollards. Captured as a point feature.	No	Some	Hard	5	A sub-type of “Traffic Control Device”.
STOCK GRID	Structure to prevent entrance or passageway of animals – generally does not stop vehicular traffic. Captured as a point feature.	No	Some	Hard	5	A sub-type of “Traffic Control Device”.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
PEDESTRIAN CROSSING	Markings or signals to help pedestrians cross a road, requiring traffic to slow. Captured as a point feature.	No	No	Hard	5	A sub-type of “Traffic Control Device”.
LEVEL CROSSING	Intersection of a road and a railway (cf bridge). Captured as a point feature.	Yes	No	Easy		May require further differentiation between marked and unmarked level crossings. Could be a sub-type of “Traffic Control Device”.
BARRIER	Data management feature used to show where a road may be cut to prevent vehicle access.	No	Some	Medium	3 or 5	Possibly use this or some other “Impediment” feature or attribute as a fall-back (eg to model blocked state forest roads or blocked suburban roads to prevent vehicle access). Could be a sub-type of “Traffic Control Device”. Could be modelled as a point, or as a line, subtype foot track, or geometry is simply cut to show no access.

FEATURE	DEFINITION	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES AND COMMENTS
ENTRY / EXIT RAMP	An access ramp to or from one road to another to allow smooth integration of traffic, and is associated with a freeway or motorway.[2] Travel flow is in one direction only, they are always sealed and they have a single lane.	Yes	Some	Easy	2	Entry/exit ramps will be identified as a sub-type of road. Jurisdictions can classify ramps according to their business needs however PSMA will continue to classify ramps as per the classification of the adjacent lower-order road. Ramp identifier would be held in the NAME field.
SCHOOL ZONE		No	No	Easy	5	Defined by speed limits. Could be a sub-type of "Traffic Control Device". Needs integration with RTAs for this to work; most likely a separate feature.
SPEED CAMERAS		No	No	Easy	4	Could be a sub-type of "Traffic Control Device".
TOLLABLE ROADS or TOLLABLE ZONES		Yes	No	No	3	Really an attribute of a road – possibly covered by User Access attribute (=2) or an NSW-style Aggregated Way.

FIELDS AND DOMAINS

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
STRUCTURAL CLASSIFICATION (=SUBTYPE)	Dual carriageway	Yes	Some	Easy to hard	2 or 3	Road must have opposing flows of traffic, with a physical impediment to crossing from one side to another. Both carriageways must carry the same name and other common attributes. Still capture each road direction individually, but label as dual carriageway.
	Standard road	Yes	Some	Easy to hard	2 or 3	
	Roundabout	Yes	Some	Easy to hard	2 or 3	
	Ramp	Yes	Some	Easy to hard	2 or 3	
	Pathway	Yes	Some	Easy to hard	2 or 3	PSMA Class 400

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	Vehicular track	Yes	Some	Easy to hard	2 or 3	Not constructed. Possible duplication with SURFACE but will leave in here.
	Connector	Yes	Some	Easy to hard	2 or 3	
ONTYPE	OnGround	Maybe	Some	Easy to hard	1, 2 or 3	
	ThroughWater	Maybe	Some	Easy to hard	1, 2 or 3	For Fords, Punts etc. Also used when standard roads are partly submerged.
	InTunnel	Maybe	Some	Easy to hard	1, 2 or 3	
	OnBridge	Maybe	Some	Easy to hard	1, 2 or 3	

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	OnStairs	Maybe	Some	Easy to hard	1, 2 or 3	
	OnDamWall	Maybe	Some	Easy to hard	1, 2 or 3	For cartographic purposes.
	OnFloodway	Maybe	Some	Easy to hard	1, 2 or 3	Dependent upon inclusion of FLOODWAY or CAUSEWAY in data model.
	Unknown	Maybe	Some	Easy to hard	1, 2 or 3	Possible default value.
SURFACE	Sealed	Yes	Yes	Easy	1	
	Unsealed	Yes	Yes	Easy	1	Feature must be under a maintenance regime, i.e. graded formed roads. (May need some more work on this.)

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	Unimproved					Not under a known maintenance regime. (Tas/SA still distinguish between 2wd and 4wd but this can be handled by Trafficability attribute.)
	Unknown	Yes	Yes	Easy	1	Default value. Use for UNDER CONSTRUCTION
STATUS	Operational / Established	Yes	Yes	Easy	1	
	Under Construction / Reconstruction	Yes	Yes	Easy	1	May include temporarily closed roads under repair.
	Proposed	Yes	Yes	Easy	1	PSMA Class 311. Likely to be built.
	Notional					Road that may never be built but is required for addressing purposes eg along waterways or on islands. (May pick up paper roads.)
FUNCTIONAL CLASS						May need separate class for service roads. Need to tighten definitions of “major centres”, “significance” etc – is there a 3rd party authoritative dataset that can be used to define this eg ABS, CGC. Need to include non-addressable lanes / rights of way.

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	National or State Highway	Yes	Yes	Easy	1	Roads which are of importance in a national sense, and/or are a major interstate through route, and/or are principal connector roads between capitals and/or major regions and or key/towns.
	Arterial Road	Yes	Yes	Easy	1	Well maintained and widely used roads which are major connectors for national highways or state highways, major centres, key towns, or have major tourist importance or which main function is to form the principal avenue of communication for metropolitan traffic movements.
	Sub-arterial road	Yes	Yes	Easy	1	Acts as connector between highways and/or arterial roads, or as an alternative for arterial roads, or a principal avenue for massive traffic movements
	Collector road	Yes	Yes	Easy	1	Provides for traffic movement between sub-arterial and lower order roads or to distribute traffic to local street systems.

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	Local road	Yes	Yes	Easy	1	Includes roads built adjacent and generally parallel to a major road to provide safe access to properties facing the road. (i.e. service roads) Providing access to facilities or properties (either suburban or rural)
	Service Lane					A road in an urban environment that does not service a building frontage and only has one traffic lane. Generally these are service lanes to access the back of a property and they are not utilised for a postal address. NSW definition (brought in for cartographic reasons and not likely to be routable).
	Access road	Yes	Yes	Medium	1	Lower level than local road, typically not addressed and typically on private land (i.e. RESPONSIBLE AUTHORITY = 'Private') – eg fire trails, driveways, access to utilities
	Path					may also include cycleways, pedestrian walkways, walkways with emergency vehicle access (eg plazas)
	Undetermined					Possible default value.
TRAFFICABILITY	2WD-ready	Yes	Most	Hard	1	Roads generally only passable in 2wd vehicles during fair weather and used predominantly by local traffic

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
	4WD-ready	Yes	Most	Hard	1	Unimproved roads generally only passable in 4wd vehicles.
	Seasonality (dry weather, subject to inundation etc)	Yes	No	Hard	3	2wD and 4WD are the minimum values for this attrrbute. Could look at Qld EPA classifications 2WD-all weather, 2WD-dry weather only, 4WD-all weather, 4WD-dry weather only. No need for seasonality or 'subject to inundation/flooding' as this would be implied from the dry-weather attribution. Difficulties around "access and condition not implied" particularly for 2WD- tracks. Needs more work?
NAME	Text values	Yes	Yes	Easy	1	Addressable road name.
ALIAS NAME					1 or 2 or 3	Eg to store Highway names along with addressable road name.
ROAD TYPE	Road, street, etc.	Yes	Yes	Easy	1	To be reviewed by ICSM working group on addressing standard.
ROAD SUFFIX	North, south, east, west	Yes	Yes	Easy	1	To be reviewed by ICSM working group on addressing standard.
NAME EXTENT		No	Some	Easy	4	Similar field to NSW AggregatedWay.

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
ROUTE NUMBER – NATIONAL	Determined by road traffic authorities.	Yes	Yes	Easy	1	
ROUTE NUMBER – STATE	MABC or otherwise.	Yes	Yes	Easy	1	
ROUTE NUMBER - OTHER		No	Some	Medium	4 or 5	Tourist routes. This could be a one-to-many relationships – separate table per route type.
RAMP NUMBER	Determined by road traffic authorities.	Yes	Some	Medium	2 or 3	Possibly inserted into NAME field as a ramp is not a separate feature.
ASSET NUMBER	Determined by jurisdictions.	No	Some	Medium	6	
DIRECTION	2-way, 1-way, alternating, unknown				6	Cross-check against INSPIRE methodology - can't just rely on geometry.
NUMBER OF LANES	One	Yes	Some	Hard	3	
	More than one	Yes	Some	Hard	3	
	Unknown	Yes	Some	Hard	3	
USER ACCESS	Public	Yes	Some	Hard	3	
	Authorised	Yes	Some	Hard	3	
	Private	Yes	Some	Hard	3	
	Restricted	Yes	Some	Hard	3	

FIELD	DOMAIN VALUES	FUNDAMENTALITY	ALREADY IMPLEMENTED?	EASE OF IMPLEMENTATION	PRIORITY	NOTES
AUTHORITY	State	Yes	Some	Hard	3	Or could expand to a generic Authority List eg State Transport, State Parks etc.
	Local	Yes	Some	Hard	3	
	Private	Yes	Some	Hard	3	Can include community title or body corporate roads.
MAINTAINER	As for Authority	Yes	Some	Hard	3	
WEIGHT LIMIT	Numerical values in metres	No	No	Medium	4 or 5	Would need to decide on signposted or design limits.
HEIGHT LIMIT	Numerical values in metres	No	No	Medium	4 or 5	Would need to decide on signposted or design limits.
SPEED LIMIT	Numerical values in km/h	No	No	Medium	4 or 5	Would need to decide on signposted or design limits.
IDENTIFIER					1	Unique feature identifier.
METADATA					1	To be discussed further.

Document Administration

Document Location

The original of this document is held at the following location:

Revision History

Revision Date	Version No.	Description	Changes Marked?
14 January	0.1	Draft data model.	
21 January	0.2	Added “priority” definitions.	
	0.3-0.4	Incorporated comments from jurisdictions prior to and from RWG meeting Nov 2009	Yes
	1.0	Changes from 0.3 and 0.4 accepted or rejected.	

Distribution

This document has been distributed to:

Organisation and Title	Date of Issue	Copies
ICSM Roads Working Group (v0.1)	14 January	intranet
Christine Butterfield – Commonwealth Grants Commission (v0.1)	21 January	1
Mia Walberg – EuroRoadS (v0.2)	21 January	1
ICSM Roads Working Group and ICSM website (v1.0)	8 January 2010	web