AUS-SPEC

The Local Government Specification

CASE STUDIES and
TECHNICAL INFORMATION

IPWEA
INSTITUTE OF PUBLIC WORKS
ENGINEERING AUSTRALASIA

NATSPEC// Construction Information

AUS-SPEC

The essential technical resource

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NATSPEC

NATSPEC is a national not-for-profit organisation whose objective is to improve the construction quality and productivity of the built environment through leadership of information. It is responsible for the development and maintenance of the National Building Specification; AUS-SPEC, the Australian Local Government Specification; and the National BIM Guide and associated documents for Building Information Modelling. It is impartial and not involved in advocacy or policy development. NATSPEC is owned by Government and industry organisations.

AUS-SPEC is the only comprehensive Australian national specification system for local government assets that is regularly updated to reflect the latest changes in regulations and standards.

For more information, visit www.natspec.com.au.

IPWEA

The Institute of Public Works Engineering Australasia (IPWEA) is a professional organisation providing member services and advocacy for those involved in delivering public works and engineering services to the community both in Australia and New Zealand. The organisation is expanding its traditional local government engineering focus to the broader public works, thereby covering all tiers of government, as well as the private sector, where IPWEA has over 40 per cent of its membership.

The evolution of IPWEA maintains the traditional expertise of local government engineering, but by broadening the base of expertise and experience, it adds a new dimension to public works professionalism in Australia and New Zealand. IPWEA promotes professionalism, education and knowledge sharing in its community.

For more information, visit www.ipwea.org.

AUS-SPEC Local Government Specification

AUS-SPEC is the national local government specification system for the life cycle management of assets. It is a joint venture between NATSPEC and IPWEA. NATSPEC manages the National Building Specification, which is owned by Government and industry bodies.

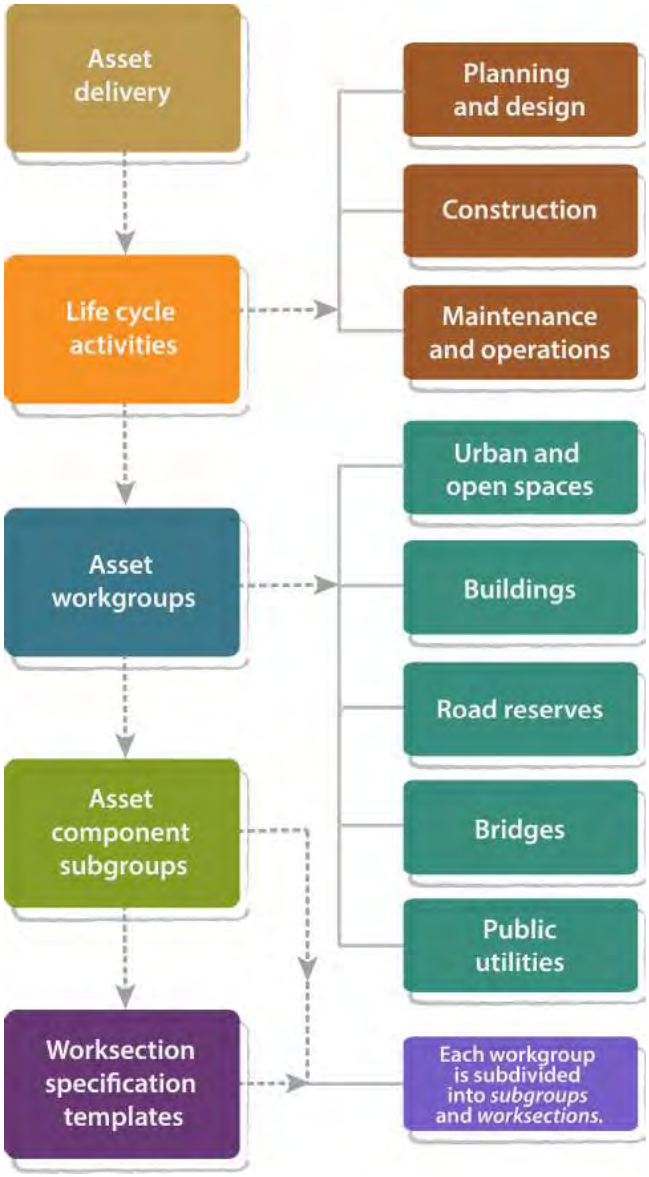
The AUS-SPEC specification documents were originally developed in 1997 to assist councils using either internal business units or outsourced contracts. AUS-SPEC provides documentation for the design, construction and maintenance of local government assets and assists councils in providing quality services that are safe for the community and the environment. Using a specification system that is familiar to all participants in a local government project helps to save time and reduce cost.

The information provided in the documents is updated annually to reflect changes in standards and regulations. It is also updated to include new technologies and current experiences from local council projects.

AUS-SPEC is aligned to the NATSPEC National Classification System, which has been widely adopted by the construction industry. This establishes a common language between governments, organisations and consultants, which improves communication between the different parties involved in a project. A common language significantly reduces the risk of delays, rework and extra costs by minimising misinterpretation.

The AUS-SPEC system provides tools, technical specification templates, a framework and processes to document requirements for various asset life cycle activities. The AUS-SPEC documents for maintenance and contracts are particularly useful for councils in allocating budgets for priority projects. AUS-SPEC provides a range of specifications for buildings, roadworks, urban and open spaces and public utilities. The recently released Rural Roads specification package will assist rural and remote councils in implementing improved practices across the asset life cycle. The system supports technical and contractual consistency between councils, yet allows flexibility to edit and add project-specific requirements where necessary.

An essential technical resource, AUS-SPEC documentation underpins council knowledge.



AUS-SPEC Asset Classification Structure

THE MID NORTH COAST REGIONAL ORGANISATION OF COUNCILS: MASTER SPECIFICATION

The Mid North Coast Regional Organisation of Councils (MIDROC) is the peak organisation representing six local government areas: Bellingen Shire, Coffs Harbour City, Kempsey Shire, MidCoast, Nambucca Shire and Port Macquarie-Hastings Councils. These Councils identified common issues with the design, construction and maintenance of road and bridge networks and other assets.

The member Councils developed a uniform approach to development and construction works, including subdivision works like roads and stormwater, which includes a specification based on AUS-SPEC for the life cycle management of assets. This provides economies of scale and efficiency for the Councils, as well as contractors within this region.

The Councils joined together to increase their effectiveness and efficiency through sharing ideas and resources. MIDROC intends to improve the lifestyle of the local communities, protect the local environment, improve the Councils' capacity and productivity, and enable the communities to be strong and sustainable in the long term. By using AUS-SPEC, the MIDROC Councils were able to develop a uniform set of specifications for construction and development to a high standard.

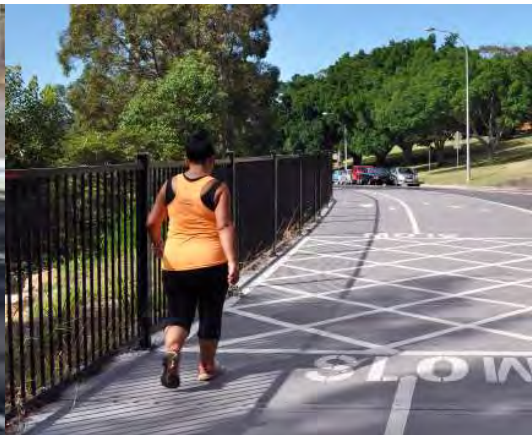
THE PROCESS

Construction and development engineers from each of the constituent Councils formed a committee to jointly develop a uniform specification for the various types of construction in their region.

A review of existing Council specifications found that the majority were based on AUS-SPEC. Some Councils were using older versions of AUS-SPEC and cited out-of-date Australian standards, materials and methods. A small number of Councils had no single set of specifications and used a range of documentation – some were good and others were not. A comparison of the previous specifications revealed a disparity in the standard and applicability of Council documents within the MIDROC region.

Specialists were called from each Council to contribute and agree on how the AUS-SPEC master specifications would be customised for the joint MIDROC document set.

Similar to MIDROC, many other Councils have also customised the AUS-SPEC master templates for completion of works, including Fairwater Drive East (bottom left) in Horsley, NSW, by Wollongong Council, and The Bay Run (bottom middle, bottom right), in the City of Canada Bay, NSW, which offers a 7 km trail around Iron Cove.



USING AUS-SPEC DOCUMENTATION

It was paramount that the standard specification requirements for development works done by external developers be consistent with specifications used for construction works of the Councils' own contract works.

There was also recognition that each Council and region would have some minor varying requirements depending on topography, style and culture. However, it was understood that major aspects should remain standard to maximise the benefits of a master specification. While the local and cultural requirements of each Council area prevented total uniformity, the criteria of individual Councils were identified and documented; appropriate adjustments to suit local requirements can be easily made.

The customised specification is known as the *MIDROC Specification Documentation for Development and Construction Works* and has been adopted by the MIDROC Councils.

In the future, the currency of the MIDROC specification series will be maintained using the AUS-SPEC master specification as a reference. Individual Councils subscribe to AUS-SPEC, which provides up-to-date information on Australian Standards and legislation.

In developing a single system based around AUS-SPEC, MIDROC now benefits from regional and uniform development of construction specifications. This includes citation of current Australian Standards and other reference documents.

Faster and more efficient production of specifications for tendering is enabled, and the competitiveness of tendering increases as contractors' familiarity with regional requirements increases.

"The AUS-SPEC documents help the Council achieve consistency in documentation, and with our levels of service."

- Mathew Naylor, Section Leader, Asset Project Delivery, Coffs Harbour City Council

Information and images courtesy of Complete Urban and the MIDROC Councils

Ron Mulock Oval

AUS-SPEC Proactive and Systems Approach to Maintenance Projects

INTRODUCTION

The original AUS-SPEC Proactive and Systems Approach to Roads Maintenance project commenced some 15 years ago and the main purpose of the current project was to enable Penrith City Council to continue to be more organised and more systematic in terms of pavement management and pavement maintenance. It was implemented throughout the local government area on the whole road hierarchies with internal resources predominantly used. Sixty per cent of maintenance work is outsourced and 40 per cent delivery is done in house.

PENRITH CITY COUNCIL

Jordan Springs New Road

Jordan Springs Park

THE PROCESS

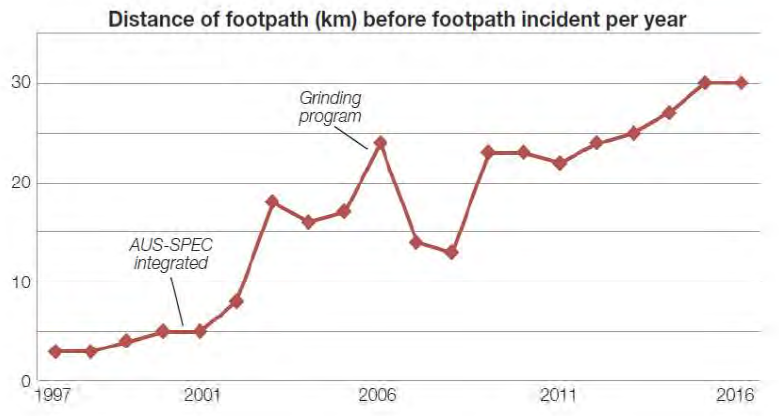
There was no benchmark that the Council could compare against, however, there was a number of revisions throughout the years to make sure that the management system is effective, efficient and that it is targeting specific issues. The council implemented this by using the trial and error method whereby they would trial the methodology for a number of months, review it and adjust it accordingly. Levels of maintenance service were set and refined, along with Response times and Compulsory intervention levels for the four classes of road in the road network.

The Council is also now in the process of expanding the AUS-SPEC Proactive Maintenance system to cover parks and recreation areas as well as buildings and facilities.

USING AUS-SPEC DOCUMENTS

The AUS-SPEC system enables the Council to control its budgets a lot better in terms of being able to forecast future years in both operating expenses and capital expenditure. It has also helped the Council to reduce and maintain the levels of insurance claims and settlements on footpath incidents as well as on roads. Furthermore, it has enabled the Council to be informed and evidence based. For example, in case there were any claims or requests from the community which did not strictly fall within the intervention levels, the Council could then go back and explain the reasons for not being able to do that quite successfully. The system is also likely to achieve these benefits across parks and recreation areas as well as buildings and facilities.

It is very important and beneficial for Penrith City Council to use AUS-SPEC and NATSPEC documents to ensure Penrith City Council's continuous improvement program is maintained by continuously providing good levels of services while maintaining the Council's budgets and controlling its liabilities successfully.



Data courtesy of Penrith City Council

In 1997, a footpath incident occurred every 3 km. The year after the AUS-SPEC system was integrated, there was an incident every 8 km. A grinding program introduced by the Council was undertaken in 2006, and the distance of footpath per footpath incident has increased since.

Jordan Springs Community Hub

Images courtesy of Penrith City Council

Thornton Estate Infrastructure

Greygums Oval Clubhouse

New Multi-Cell Culvert at Maxwells Creek

375mm Diameter Sydney Water Main

BERNERA ROAD EXTENSION

Camden Valley Way to Soldiers Parade, Edmondson Park

Liverpool City Council recently completed construction, under contract, of the Bernera Road Extension from the existing intersection at Camden Valley Way, Prestons, through to Edmondson Park Rail Station, providing direct access into the land development areas along Sydney's South West Rail corridor. The rail line, which is Sydney's most recent addition to the heavy rail network, has the potential for extension to Western Sydney International (Nancy-Bird Walton) Airport, which is currently under construction.

Construction of the Bernera Road Extension was through a green field site, acquired through extensive property acquisitions, which in turn afforded the opportunity for joint installation of major utility carrier mains along the full road length, carried out on behalf of Endeavour Energy and Sydney Water, to provide future capacity for Sydney's newest land release areas.

Kevin Smith, Manager Infrastructure Delivery at Liverpool City Council formed and headed a project team which oversaw the concept development, design and contractor engagement, through to construction and delivery of the project. Kevin was insistent that the roles and responsibilities of all 'tripartite' parties were clearly defined through clear, concise and legally sound documentation. To this end, Council engaged the services of specialist construction lawyers, HWL Ebsworth, who prepared and facilitated negotiation of the Deeds of Agreement between the major parties and also reviewed the Request For Tender (RFT) documentation.

Suresh Kumar, Liverpool City Council's Project Manager for the works, further explained, "Sydney's newest land release area is rapidly taking shape with considerable interest from residents, planners, developers and politicians. The road extension, which was funded jointly by the NSW State Government and Liverpool City Council to the total value of $41 million, needed to be delivered as expediently and smoothly as possible. To ensure that the intent and responsibilities of the project were clear and apparent, along with accountability and transparency, it was vital that the documentation for the project was well defined. In that regard, the AUS-SPEC contract and specification documentation was an obvious choice, providing a modular and partitioned 'user-friendly' structure."

The project involved the construction of a median nature strip divided four-lane road with the adjustment of various side roads, including three signalised intersections. The approximate length of the constructed road is 1350 metres. In addition to the carrier mains, it included construction of a major multi-cell culvert and the extensive installation of additional utilities including stormwater reticulation, temporary and permanent water mains, electrical street lighting circuitry, Telstra and NBN Co. communication lines and gas and sewer line diversions. The line and level of the new roadway required the extensive importation of select formation, which the Council was able to provide as reclaimed

and environmentally approved road milling material from other pavement rehabilitation sites. The finished roadway was extensively landscaped with the added provision of ten bus bays, shelters and extensive pedestrian and cycleway paving along its entire length.

THE PROCUREMENT PROCESS

The project drawings were designed and provided by J. Wyndham Prince under a separate consultancy contract. The AUS-SPEC Capital Works contract shell was utilised for the project RFT and final contract compilation, under the Formal Instrument of Agreement (FIOA) template. Liverpool City Council needed documentation, despite its complexity, that had to to be logical in presentation, easily understood and also electronically navigable. The documentation was compiled to suit electronic tender box presentation and download.

In that regard, the AUS-SPEC MS Word Templates easily translated to PDF files, incorporating all of the Bookmark navigational aids provided in the MS Word files. In hard copy, the full document set would have presented as a massive paper publication. Instead, through the provision of compressed electronic file sets in the e-tender portal, it was possible to issue all documentation, including tender issue drawings, directly to tenderers without the requirement for any physical document printing. Because of the tripartite nature of the works, it was important to incorporate the specifications for each of the vested parties, i.e. Liverpool City Council, Endeavour Energy and Sydney Water. Similarly, to represent the separate tripartite interests, it was necessary to package the works as a five-part separable portions contract: three directly applicable to Liverpool City Council and one each for Endeavour Energy and Sydney Water.

Liverpool City Council directed tenderers to its published AUS-SPEC Technical Specification set, available through a registration portal on the Council's web site, in keeping with current AUS-SPEC licence requirements. Liverpool City Council utilised a customised version of AS 2124 *General Conditions of Contract*, which had been developed with the assistance of HWL Ebsworth. This modified version of AS 2124 aligned the contract with current statutory requirements and Separable Portions definition, as well as strengthening the Council's contractual position.

USING AUS-SPEC CONTRACT DOCUMENTATION

After an extensive tender evaluation and assessment process, conducted under the supervision of an engaged probity advisor, the works were awarded to Burton Contractors, a Sydney-based civil and building works contractor. Council maintained the overall superintendent function over the contract, with the operational provisions of the agreement between parties being formalised in the separate Deeds of Agreement. AUS-SPEC contract shells are MS Word based. Utilising the Table of Contents function in MS Word along with the Heading Styles function, it was possible to create an easily navigable document, both during compilation and for the end user. The modular construction of the RFT documentation easily lent itself to adaptation for production of the FIOA.

At the time of contract compilation, it was possible to produce a thin volume FIOA with all electronic attachments, included in a credit card-styled USB. The only physical document manifestation occurred with the production of countersigned documents, which were then scanned and bound into the electronic contract files.

"It was vital that the documentation for the project was well defined. In that regard, the AUS-SPEC contract and specification documentation was an obvious choice, providing a modular and partitioned 'user-friendly' structure"

— Suresh Kumar, Project Manager, Liverpool City Council

Looking South Towards Edmondson Park Station and Adjacent Multi-Storey Development

Typical New Bernera Road Section

Images courtesy of Liverpool City Council

TUNCURRY WASTE MANAGEMENT STATION

Stuart Small, Team Leader Project Delivery at MidCoast Council, has used AUS-SPEC specifications since 2002. In November 2015, a new challenge arose.

"The Council's landfill at Tuncurry was filling up quickly, following an unforeseen environmental delay. We needed to transition the Waste Transfer Station Project from the design to procurement phase, and have a contract out for tender prior to the Christmas holiday period. The time frame in which Stuart was able to interact with consultants, prepare and compile the project contract documents, and have a local government tender issued was impressive. It was an important turning point for the project," explained Peter Brabant, Waste Division Project Manager.

The $4.5 million project involved converting Tuncurry Waste Facility from a landfill to a modern Community Recycling Centre and Waste Transfer Station with dual weighbridge capabilities. It was part of the NSW Government's 'Waste Less, Recycle More' initiative and was the final project in the Council's Waste Management Strategy.

OUTCOMES

The site masterplan has been delivered by the following:

- Construction of a new Community Recycling Centre, Waste Transfer Station and supporting utilities and roads infrastructure
- Construction of a new dual weighbridge system and introduction of net weighing
- Creation of a new "Community Precinct" which includes community groups such as the 'Forster Tuncurry Mens Shed', 'The Green' and 'Green Bikes'

THE PROCESS

As the site geology was predominantly sand, significant earthworks and pavement subbase preparation was required to handle the regular heavy truck movements. The waste facility needed to continue operating seven days a week. This was a significant project for the regional council, formerly known as Great Lakes, which was in the midst of an amalgamation to become MidCoast Council.

The AUS-SPEC Complete package provided an excellent framework for the civil and building works. Minor customisation of the civil specifications was required, while the steel and concrete structures needed more extensive customisation to reflect the local geography and the Council's aesthetic requirements.

Building and construction company ATB Morton, headquartered in Newcastle, was awarded the contract. They partnered with local civil subcontractor Ditchfield Contracting for the civil works.

USING AUS-SPEC DOCUMENTATION

With AUS-SPEC Templates, upgrading and expanding the water, sewerage and electrical services on site were clearly and concisely documented. Quality was consistent across the site. Civil works requirements included:

- Bulk earthworks
- Flexible pavement construction (base and subbase)
- Installation of stormwater systems
- Installation of environmental controls
- Construction of two steel buildings and associated concrete structures

AUS-SPEC allowed the Council to clearly communicate their expectations to the subcontractors during the tender and execution phases. This eliminated redundancy and minimised risk, while meeting the Council's vision. From both a contractual and practical perspective, AUS-SPEC enabled an effective means of specifying.

"We set a high benchmark for the civil works, and the AUS-SPEC documents provided very clear details to the civil subcontractor so there was no ambiguity and they knew exactly what was expected from them since they regularly undertake works where AUS-SPEC has been utilised," said Mr Small.

AUS-SPEC Templates provided significant support detailing Council requirements; this was an important risk control, especially for the building works where the in-house project delivery team lacked experience.

ENVIRONMENTAL CONSIDERATIONS

The project was originally planned for an adjacent site that contains the critically endangered Tuncurry Midge Orchid. The facility was redesigned after the Council received a referral decision under the *Environmental Protection and Biodiversity Conservation Act* (1999).

ACCOLADES

The site is considered a state-of-the-art facility and is well recognised by its peers. The Tuncurry Waste Management Facility changes the general public's behaviour around waste disposal by promoting the recovery of resources from the waste stream, providing opportunities for reuse and facilitating social change through the Community Precinct. This precinct includes the Men's Shed, Green Shop, Green Bikes and a community garden.

The site promotes the 'Re-imagine Waste' campaign, changing the way the public thinks about waste. It demonstrates practical examples of the Waste Avoidance and Resource Recovery (WARR) Hierarchy in action, educating visitors and promoting the recovery of resources from the waste stream.

The Tuncurry Waste Management Facility has won major awards since its completion. In November 2018, MidCoast Council received the IPWEA NSW Engineering Excellence Award in Environment and Sustainability Outcomes. At the Brisbane Waste Conference in March 2019, the Waste Management and Resource Recovery Association of Australia awarded the project the National Innovation in Waste Transfer Stations Award.

MidCoast Council captured the outcomes of the project in the video *Developing a Community Recycling Centre in Tuncurry*. Watch it online here: https://www.youtube.com/watch?v=xcsyrTqpge0

"Council has redeveloped the existing Tuncurry Waste Facility from a landfill site to a $4.5 million multi-functional integrated Waste Management Facility. A site Masterplan coordinated the detailed design of multiple disciplines across the site, also providing opportunities for community groups to work together on the site to achieve a common goal of waste diversion from landfill to recycling. The facility has now become a Community Hub involving modern Waste Compaction and Transfer Station, a large Community Recycling Centre, Education Facility and a new Men's Shed Workshop and community car parking."

- IPWEA Judges John O'Connor and Greg Moran

Images courtesy of MidCoast Council

MidCoast Council project staff: Peter Brabant, Amy Hill and Stuart Small, with IPWEA (NSW) Vice President, Peter Shields

USING AUS-SPEC FOR:

ASSET MANAGEMENT

Life cycle management encompasses all asset strategies and practices associated with an asset or a group of assets in an ongoing planned maintenance program, resulting in reduced life cycle costs and increased asset life. A series of nationally consistent frameworks was developed by the Local Government and Planning Ministers' Council (LGPMC) to provide minimum requirements for asset and financial management and planning by local government across Australia. This development supports improved management of assets such as roads, water and sewerage, drains, footpaths and public buildings, which local government provides for the community.

The AUS-SPEC specification system is a major information source for asset management which complements the International Infrastructure Management Manual (IIMM). AUS-SPEC provides tools, templates, the framework and processes to assist with various asset life cycle activities. The AUS-SPEC maintenance system assists local government to achieve an optimal balance between the costs of planned and unplanned maintenance. AUS-SPEC encourages a proactive approach to asset maintenance rather than a reactive approach.

ASSET MANAGEMENT FRAMEWORK

An asset management (AM) framework drives the implementation of asset management and aligns with the Council's strategic objectives. It consists of:

- **AM policy**: Outlines principles, requirements and responsibilities for AM and is linked to the Council's strategic objectives.

- **AM strategy**: Outlines AM objectives, practices, action plans, audit and review processes.
- **AM plan**: Outlines asset description, levels of service, demand forecast and life cycle activities.

LIFE CYCLE ACTIVITIES

The life cycle activity of an asset is defined as the activity commencing with the identification of the need and terminating with the decommissioning of the asset. AUS-SPEC's specification system for the life cycle management of assets is aligned to the NATSPEC National Classification System, which has been widely adopted by the construction industry. AUS-SPEC can be used for the following life cycle activities, as defined in IIMM:

- **Asset Planning**: Defines the most effective solution to meet the services required by the community. Use Workgroup *00 PLANNING AND DESIGN,* which covers development and subdivision of land, design of waterfront development, bushfire protection, design of roadways and design of public utilities.


Gold Coast City Council (left) and Adelaide City Council (right) utilise the AUS-SPEC system for their asset management plan

- **Asset Creation/Acquisition**: Includes works that create a new asset, or works that upgrade or improve an existing asset beyond its existing capacity using capital expenditure. This may result from growth, or social or environmental needs. Assets may also be acquired at no direct cost to the Council, e.g. donated assets. AUS-SPEC focuses on the technical aspects and processes of how to plan, design and construct new assets using the following:
    - » **Design worksection templates**: Provide guidance and procedures for those involved in the design of civil infrastructure for local government, both internally (Council staff) and externally (Consultants and developers). The worksections support uniform design practices for civil infrastructure works. For Design, use Workgroup *00 PLANNING AND DESIGN*.
    - » **Construction worksection templates**: Suitable for both quality control and integrated management contracts associated with most Councils' engineering activities. These worksections have been developed to assist local government to control the quality of works performed by contractors and developers. For Construction, use Workgroups 01, 02, 03, 11 and 13.
- **Maintenance and Operations**: Operations are active processes of utilising an asset that will consume resources such as manpower, energy, chemicals and/or materials (e.g. cleaning, mowing etc.). Maintenance is the actions necessary for retaining an asset as near as practicable to its original condition, excluding rehabilitation or renewal. Over time, the AUS-SPEC asset maintenance system provides Councils with records of asset inspections, defects, programmed and prioritised works, and monthly work completed reports, which improve a Council's maintenance history and asset inventory. AUS-SPEC maintenance activity specifications cover both unplanned and planned maintenance. For Maintenance and Operations, use Workgroups 14 to 18.
- **Asset Monitoring/Condition/Performance**: AUS-SPEC provides a framework for performance requirements of the Council assets, defines the technical level of service, response times, and compulsory intervention levels to systematically program asset maintenance. AUS-SPEC covers most of the maintenance activities of local government assets. Management strategies for planned and unplanned maintenance of various assets provide a proactive approach to maintenance. For asset monitoring/performance, use Workgroups 14 to 18.
- **Renewal/Rehabilitation/Replacement**: Renewal is major work which does not increase the asset's design capacity but restores, rehabilitates, replaces or renews an existing asset to its original condition. For asset renewal and rehabilitation, a combination of AUS-SPEC construction and maintenance worksections may be required. Use Workgroups 01, 02, 03, 11 and 13 to 18.

RELATIONSHIP BETWEEN AUS-SPEC AND IPWEA (IIMM AND AIFMM)

To assist the Council's implementation of the nationally consistent frameworks, the AUS-SPEC maintenance management system should be integrated with the Council's asset management plans and long term financial plans. IPWEA's National Asset Management Strategy Committee (NAMS.AU) provides guidelines (IIMM and AIFMM), tools and templates to assist local government in developing asset management systems and integrating asset management with their corporate and financial planning.

According to the Australian Infrastructure Finance Management Manual (AIFMM), classification of an asset is "one of the most important steps in financial reporting, asset accounting, and asset management." The NATSPEC National Classification System, in alignment with the AIFMM asset hierarchy, can link with GIS (Geographic Information System) and can assist in providing relevant information to the asset managers, finance managers and service managers. AUS-SPEC maintenance management plans can be linked to the asset management plans and financial management plans through the NATSPEC National Classification System or the Activity codes of Maintenance specifications.

USING AUS-SPEC FOR:

ASSET DESIGN AND DELIVERY

Local government plays an important role in land use planning, development, approval and construction of infrastructure in all Australian states and territories. AUS-SPEC assists Councils in this role by providing documentation templates and guidance material for a systematic approach to the planning, design and construction of new infrastructure assets. AUS-SPEC also provides documentation related to the maintenance of existing assets.

BENEFITS OF USING AUS-SPEC FOR ASSET DELIVERY

AUS-SPEC provides a documentation system for the delivery of assets to meet the essential services required by the community. The system provides the following benefits:

- **Local government focus:**
  - » Planning, design, construction and maintenance contract documentation requirements for local government assets
  - » Simple and easy to use
- **For minor civil works:**
  - » Specification requirements are limited to the standard of minor civil works
  - » Addresses minimum best practice requirements
- **A national document:**
  - » Applicable across all Australian jurisdictions
  - » Accommodates variations for metropolitan and regional locations, climate zones or locally available materials
- **A reference type specification:**
  - » Minimal customisation required
  - » Addresses the shortage of in-house technical expertise and reduces the need for outsourcing
  - » Consistency for contractors specialising in local government work
  - » Performance and technical requirements are separated from contract management requirements
- **An industry standard:**
  - » Improved productivity and quality
  - » Good quality outcomes at project level

USING AUS-SPEC FOR PLANNING

AUS-SPEC TECHguide TG 201 *Process and procedures for the development and subdivision of land* is applicable to the planning approval process and design requirements for the development and subdivision of land within a Council area. It provides guidance on the infrastructure requirements for subdivision and development in urban residential, rural residential, rural and industrial commercial areas including development applications, assessment and determination criteria, the appeal process, development application submission documentation requirements, developer contributions and fees, certificates, bonds and environmental considerations.

This is a reference document for the development or updating of documents and forms that set out Council requirements for development and subdivision of land. The guidelines are intended to assist Councils to achieve the following objectives:

- To provide a functional, attractive and safe environment for residents that is consistent with community standards and needs
- To minimise adverse effects on the natural environment
- To provide for the needs of future users of the land with respect to building requirements, vehicular and pedestrian access, provision of services and an amenity appropriate to the zoning of the land
- To economically utilise the land resource of the area
- To achieve a balance between the development or subdivision of residential, commercial and industrial land and the amenity of existing residents
- To provide for an equitable and efficient distribution of public amenities and services
- To minimise Council's future maintenance costs for roads, services and open spaces

USING AUS-SPEC FOR DESIGN

The AUS-SPEC Design worksection *Templates* provide guidance, design criteria and documentation requirements for the execution and recording of the design process for local government infrastructure, including open space, road reserves, bridges and public utilities. They complement the AUS-SPEC Construction worksection *Templates*.

The *Templates* should be customised to reflect the Council's particular requirements. The customised *Templates* can then be used to document Council subdivisional guidelines for internal use (Council design staff) or as a Design Reference/Design Manual for developers and external consultants. This uniform approach provides the following benefits:

- Infrastructure associated with any Council works is designed to be fit for purpose and of a standard maintainable by the Council
- Clear records of key design processes are documented
- Data relevant to the asset maintenance is available for future use by the Council
- Specification requirements for development by external developers are the same as the specifications used for construction of the Council's own contract works

Quality requirements at the design stage are covered in *0010 Quality requirements for design*. The checklists included in this worksection provide a valuable tool to achieve the following objectives:

- Remind designers of design criteria
- Provide a quality record of the design process
- Allow additional criteria to be integrated into the Council's design process

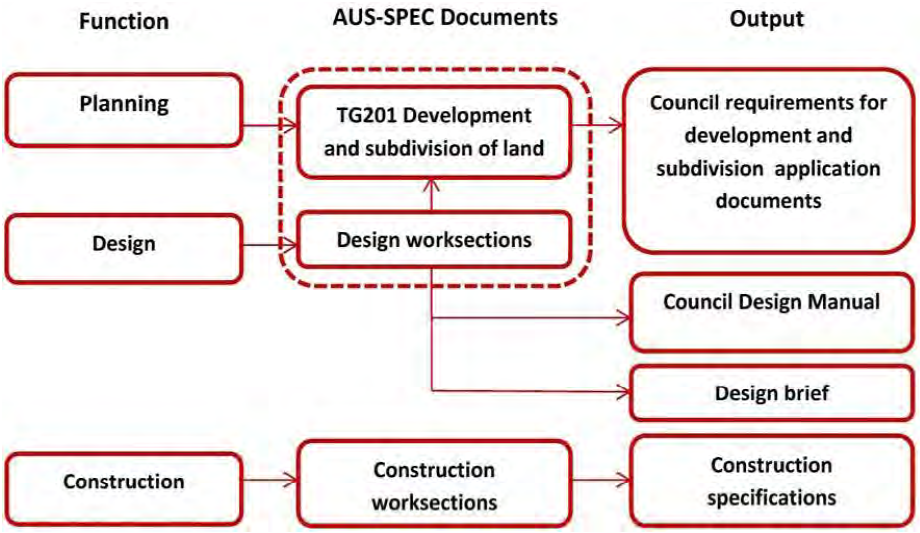
USING AUS-SPEC FOR CONSTRUCTION

The AUS-SPEC specification system includes specification *Templates* for the construction of local government roads, public utilities, buildings and landscape works.

For construction of minor civil works, use selected worksections from Workgroups 01, 02, 03, 11 and 13.

For construction of building works, use Workgroups 01 to 09.

TECHguides TG 101, 102 and 103 provide guidance on the compilation of tender and contract documentation for either quality control or integrated management contracts.



Infrastructure asset delivery using AUS-SPEC

USING AUS-SPEC FOR:

CONTRACT DOCUMENTATION

"The Australian economy spends approximately $7 billion per annum to resolve disputes in the construction industry. Concerns exist regarding the cost of tendering, lack of clarity of documentation, and unequal allocation of risk."

- CRC Construction Innovation, Guide to leading practice for dispute avoidance and resolution: An overview

The AUS-SPEC specification system can be used for standard and period supply and service contract documentation for the life cycle management of assets. The AUS-SPEC system assists users to manage each stage of the contract cycle: project initiation; project delivery; compilation of contract documents; contract management and administration; operation; maintenance and asset management.

PROJECT DELIVERY AND PROCUREMENT

Local government typically procures the following:

- **Building and construction services** involving major works (e.g. construction of an aquatic centre or construction of a road) or minor works (e.g. repairs to a footpath or resurfacing a car park)
- **Supply of services** including supply of equipment or material
- **Period supply and services** including construction or non-construction services over a fixed period of time (e.g. linemarking of roads, security surveillance, bituminous surfacing, or weed treatment)
- **Consultancy services** including design and documentation

The Local Government Acts of the various states and territories underpin the detailed tendering process and procurement procedures used by Councils. AUS-SPEC provides for the incorporation of state-based requirements into contract documentation and also references AS 4120 *Code of Tendering,* which sets out the ethics and obligations of the principal and tenderers in the tendering process in the construction industry.

THE IMPORTANCE OF SPECIFICATIONS

Preparing the specification is a core process in tendering and contracting. It is an essential contract management document which sets out the Council's requirements to prospective suppliers and contractors. A clear, concise and unambiguous specification results in more accurate tender bids and fewer variation claims.

The AUS-SPEC specification *Templates* and associated guidance documents provide a framework for developing quality documentation for different procurement methods and types of contracts. They can be used to define:

- Outputs
- Quality standards and standards of compliance
- Method of payment
- Risk identification and management
- Procedures, roles, and responsibilities
- Dispute resolution processes
- Requirements for the Council's economic, social and environmental objectives

COMPILATION OF CONTRACT DOCUMENTS

The AUS-SPEC contract document system is suitable for all Council services related to asset management, including design, construction, maintenance and operations of urban and open spaces, buildings and facilities, road reserves and public utilities.

Reference Documents

Before compiling the documentation, refer to the following AUS-SPEC TECHguides for detailed guidance on contracts, technical specifications, tender submission requirements and sample documents.

- TG 102 *Guidelines for Principals – standard contracts*
- TG 103 *Guidelines for Principals – period supply and service contracts*
- TG 104 *Guidelines for Principals – sample documents*

Standard Contracts

Identify the following contract requirements for the project:

- Conditions of tendering: Required for tender documentation only
- Conditions of Contract: General conditions, Annexures and Special conditions of contract. An SAI Global licence is required to use the Annexures of AS 2124 and AS 4000
- Quality management system: Quality assurance or Integrated management
- Method of payment: Schedule of rates or lump sum or a combination of both

Period Supply and Service Contracts

In addition, for period supply and service contracts, define the following contract requirements:

- Extent of service: Supply only, supply and deliver, or supply, deliver and install/lay/place
- Type of quality control: Quality control or Quality management system
- Period of contract: e.g. 12 months with optional extension for 3 to 5 years or a longer term
- Method of payment: Monthly payment, proportional payment, payment upon delivery

SPECbuilder

Using SPECbuilder, NATSPEC's online specification compilation software, select the appropriate AUS-SPEC worksections and NATSPEC worksections to create a project specification. Edit standard clauses where necessary and customise the worksections to include project specific information. Complete any checklists and annexures to suit the needs of a particular project.

Project Documentation

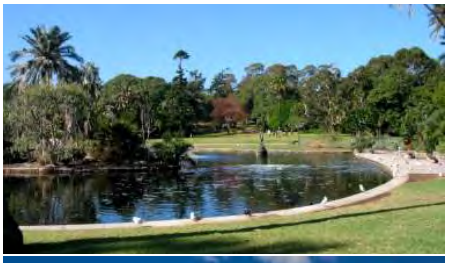
Assemble the project specific documentation in two sections:

- Section A – Tender documents. Assemble separately. For electronic tendering, a PDF file with all the information can be issued to the tenderers.
- Section B – Contract documents. Assemble contract documentation in four volumes: conditions of contract, technical specifications, drawings and schedules (not covered by AUS-SPEC) and tender submission documents and additional information.

Contract documentation is essential for the effective life cycle management of local Council assets, such as River Torrens foot-bridge in Adelaide (left) and Upper Coomera Community Centre on the Gold Coast (right)

USING AUS-SPEC FOR:

ASSET MAINTENANCE



The AUS-SPEC system supports a proactive approach to maintenance based on programmed maintenance, quality management and competitive principles.

The specification system can be adapted for documenting routine, periodic and urgent maintenance, using in-house service agreements or external contracts, or a combination of both.

ROLES AND RESPONSIBILITIES

Under the AUS-SPEC maintenance system, the roles and responsibilities are allocated as follows:

- The Principal (Council) specifies the maintenance requirements and assesses the quality capability of the Contractor/Service provider.
- The Contractor/Service provider controls the processes and methods, verifies conformance and provides the products and services. Quality inspection is a separate activity to verify the performance of the completed maintenance work.
- The Principal's Superintendent audits the maintenance system, methods and end product during the course of the Contract.

AUS-SPEC MAINTENANCE SYSTEM

The AUS-SPEC maintenance system includes reference documents and a series of *Templates*, known as worksections, classified according to the NATSPEC National Classification System. The *Templates* can be edited to suit a particular project reflecting the asset maintenance management policy of the Council. They include:

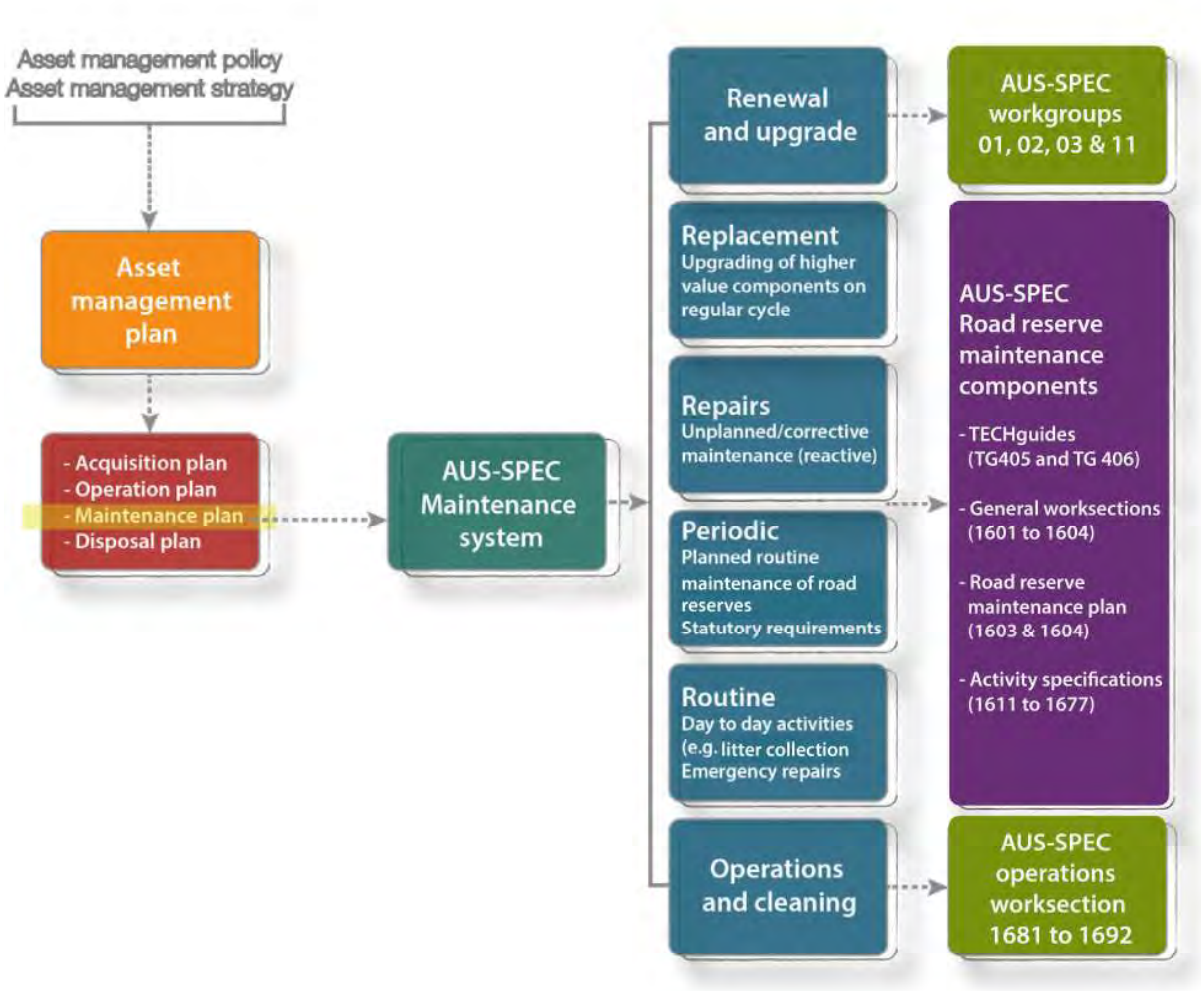
- **Reference Documents**: Including **TECHguides**, which assist with the preparation of maintenance contract documentation
- **General Requirements (Maintenance)**: Outlines the work and defines the measurement and payment
- **Contract Schedules**: Includes schedule of asset network, facility data sheets, maintenance frequency, schedule of rates and day works rates, lump sum components, etc.
- **Maintenance Plan**: Nominates anticipated activities and confirms agreement with the Principal's requirements and the method of operation by the contractor. The plan is prepared by the Principal and completed with input from the Contractor/Service provider. It consists of two parts:
  - **Part 1**: Outlines the maintenance performance policy, maintenance organisation and activity specifications. Part 1 is to be included with the Tender documentation and is to be read in conjunction with the General requirements included in the Tender documentation.
  - **Part 2**: Includes management procedures and maintenance planning. This part of the plan is based on the structure of a Quality manual and Quality plan; however, the simplified format does not require third-party verification or extensive documentation by the Contractor/Service provider.
- **Proformas**:
  - Non-conformance management forms, Maintenance Defect Register, Work Order form, Hold Point release form, Damage report and repair form, etc.
- **Maintenance Worksections**:
  - **Activity specification**: Sets out the requirements for a particular activity including scope, work method, inspection requirements, special requirements, hold points and checklists.
  - **Activity contract requirements**: Sets out the performance and service level requirements (recording level, response time, intervention levels, MMS reporting units and method of payment for a particular activity (lump sum/schedule of rates/day works). The AUS-SPEC defaults should be revised by Council, in line with the Council Asset Management policy.

BENEFITS OF AUS-SPEC MAINTENANCE SYSTEM

The AUS-SPEC maintenance system is a professional, best practice approach to maintenance that allows Councils to:

- Calibrate service levels within their maintenance and operations budgets
- Prepare documentation for in-house and private maintenance contracts
- Collect records of asset inspections, defects, programmed and prioritised works and monthly works completed reports
- Progressively improve management of asset maintenance, with control and historical data
- Benchmark with other organisations using AUS-SPEC as work processes and outcomes are essentially the same
- Manage risk through a systematic approach to maintenance of Council assets

Appropriate AUS-SPEC worksections can be selected using SPECbuilder, the online NATSPEC specification compilation software, and customised for specific projects. The full list can be found at www.natspec.com.au.



A typical example of using AUS-SPEC Maintenance system for Road reserve maintenance

USING AUS-SPEC TO:

SPECIFY BUILDING AND FACILITY MAINTENANCE

Good maintenance, like good design, can be difficult to define. Part of the uncertainty is that maintenance may refer to the whole system, as well as its components. For example, maintaining an air conditioning system may involve inspections (e.g. to AS 1851 *Routine service of fire protection systems and equipment*) without having to change anything, whilst maintaining a building may involve replacing parts, such as defective windows, or repairing partitions. Building and facility maintenance using the AUS-SPEC system is defined as follows:

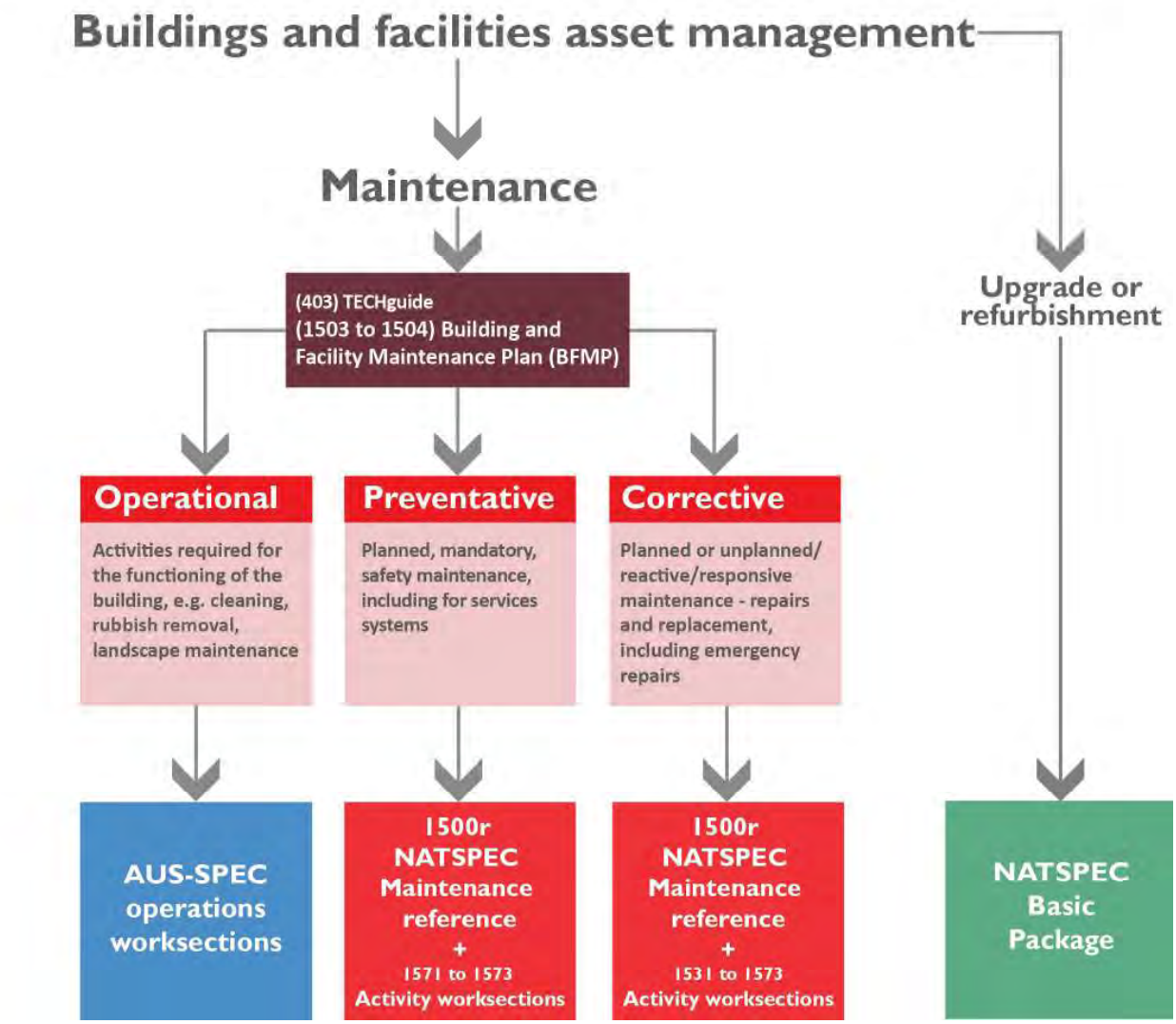
> *All actions necessary for retaining an asset as near as practicable to its original condition, but excluding rehabilitation or renewal.* (Source: International Infrastructure Management Manual)

Maintenance includes actions such as regular inspections, repairs and minor replacement of components to eliminate the cause of defects and to avoid excessive repetition of maintenance effort, but does not include upgrading the asset.

AUS-SPEC MAINTENANCE SYSTEM

Effective maintenance of buildings and facilities involves maintenance strategies and maintenance management systems, captured in the maintenance plan. The AUS-SPEC Maintenance System can be used to compile documentation for a maintenance contract, as shown in the figure below, and includes the following:

- TECHguide TG 403 *Guide to building and facility maintenance management system and documentation*
- NATSPEC *Maintenance Reference,* which covers corrective maintenance works and preventive maintenance works for services systems
- AUS-SPEC Building and Facilities Maintenance includes *General requirements*, *Contract schedules* and *Building and facility maintenance plan* templates, which can be used to define the scope of work and project specific requirements
- AUS-SPEC Activity specifications defining performance criteria and repair and replacement criteria



A typical example of using the AUS-SPEC Maintenance system for Buildings and Facilities Maintenance

USING AUS-SPEC FOR:

MANAGEMENT OF UNSEALED ROADS

INTRODUCTION

Unsealed roads account for approximately 484,000 km from a total of 810,000 km of Australia's road network. They provide access to rural and remote communities, movement of passenger and commercial vehicles, haulage vehicles routes for different industries and emergency services. They comprise either natural material or gravel and do not have a permanent water-resistant surface like bitumen spray seal, asphalt or concrete.

MANAGEMENT OF UNSEALED ROADS

Unsealed roads can deteriorate rapidly due to weather conditions, traffic volume, construction quality, lack of availability of materials, poor drainage provisions and inadequate maintenance. Effective and efficient life cycle management of unsealed roads is a significant issue faced by most regional, rural and remote councils. The guiding principles of unsealed road management include:

- Maintenance of road safety through quality design
- Providing a high-density impervious gravel pavement to deflect rainfall away from the weaker subgrade
- Reduction of road maintenance costs by using mechanical blending and chemical stabilisation to reduce defects such as potholes, slipperiness, dust, ravelling, corrugating and rutting
- Testing of materials crushed and screened in each quarry to ensure better service and extended resheeting life

The AUS-SPEC specification system of *Templates* can be used to document design requirements such as stage of construction, design life, pavement materials and construction documentation requirements and maintenance of unsealed roads. The new Rural Roads package will assist local government to effectively manage these extensive assets.

Design

The *00 PLANNING AND DESIGN* Workgroup covers quality requirements, bushfire protection, site regrading, control of erosion and sedimentation, geometric road design, pavement design, pathways and cycleways, design of stormwater and subsurface drainage.

Construction, rehabilitation and renewal

The following AUS-SPEC Workgroups can be used to document the construction, rehabilitation and renewal requirements of unsealed roads:

- *01 GENERAL*: For tendering requirements, quality assurance, schedule of rates, integrated management, environmental management and standard contract checklists
- *02 SITE, URBAN AND OPEN SPACES:* For construction of bushfire perimeter tracks, pathways, masonry walls, crib retaining walls, gabions and rock mattresses
- *03 STRUCTURE:* For auxiliary concrete works
- *11 CONSTRUCTION – ROAD RESERVE:* For construction requirements of various elements relating to unsealed roads including traffic management, control of erosion and sedimentation, clearing and grubbing, earthworks, stabilisation, pavement base and subbase, road openings, drainage elements such as subsoil and formation drains, pavement drains and various ancillary items like signposting and boundary fences
- *13 CONSTRUCTION – PUBLIC UTILITIES:* For construction of drainage elements including stormwater drainage,

Maintenance

Maintenance practices aim to slow down the rate of deterioration by ensuring the key factors affecting maintenance of unsealed roads, as shown in the figure below, are adequately managed. Proactive maintenance and inspection programs aim to provide continued structural integrity and safety, minimise erosion and sedimentation, and provide a free draining surface to the formation. Maintenance normally includes reshaping pavement cross-sections, replacing lost wearing course material, adding material where weaknesses occur, cleaning table drains, extending roadside drainage and removing surface defects. Details on improving materials and maintenance are provided in TECHreport TR 08 *Management of Council gravel pits in country areas — A case study* and TECHnote GEN 027 *Maintenance of unsealed roads*.

Factors affecting maintenance of unsealed roads

Councils can use the AUS-SPEC maintenance system to collect records and prepare documentation relating to asset inspections, program and prioritise works, align service levels to maintenance and operations budgets, and manage risks relating to unsealed roads through a systematic set of processes. The following AUS-SPEC Workgroups can be used for effective unsealed roads maintenance:

- *11 CONSTRUCTION – ROAD RESERVE:* For control of traffic, control of erosion and sedimentation, stabilisation, wearing course, base and subbase, subsoil drains, signposting and guide posts related to rehabilitation and renewal
- *14 MAINTENANCE AND OPERATIONS – URBAN AND OPEN SPACES:* For tree and vegetation control in road reserves, and boundary fence repairs
- *16 MAINTENANCE AND OPERATIONS – ROAD RESERVE:* For general requirements relating to road reserve maintenance, maintenance schedules and road reserve maintenance plans. Activity specifications include *Templates* for local shape correction, grading and resheeting of unsealed roads and unsealed shoulders, pothole repairs, stabilisation, ancillary works such as signage, road traffic control and storm damage response for road safety
- *18 MAINTENANCE AND OPERATIONS – PUBLIC UTILITIES:* For procedures on general maintenance of drainage elements and structures, including pits, culverts and drains located in the road reserve

CONCLUSION

Unsealed road networks represent a significant proportion of Australia's infrastructure. Rural and remote Councils using the AUS-SPEC specification system to document the design, construction and maintenance of unsealed roads may significantly improve the structural integrity, safety and performance of unsealed roads and better serve their rural and remote communities using the AUS-SPEC Rural Roads package.

"IPWEA is renowned for promoting best practice, producing industry leading publications and providing support training. It's our practical approach that is valued so highly by Councils, Government and the private sector.

AUS-SPEC was originally developed by IPWEA to provide nationally consistent civil specifications that could be easily used by Local Government Authorities across all jurisdictions.

AUS-SPEC provides a library of civil design, construction and maintenance templates and allows the flexibility to edit and add Council specific and project specific information. It means that everyone involved in design, construction and maintenance of public infrastructure assets is using the same language."

Murray Erbs, Chair NAMS.AU, IPWEA Australasia

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AUS SPEC

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