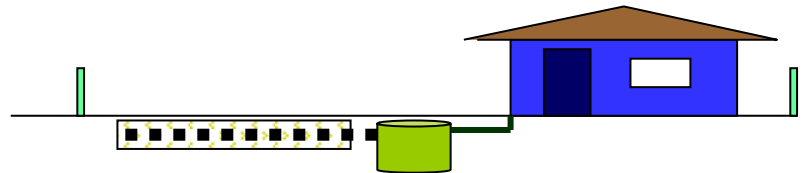


On-site wastewater management services OWMS ~~A team effort~~ A Systems Approach

March 2016



Achieving “excellence” in OWMS

- Essentially we are about managing risks in the best interests of land owners and the communities they live amongst
- Primary risk is to human health
- Many throughout NZ tasked with mitigating the risks:
 - Distributed infrastructure service to ~20% of NZ population
 - The on-field game players:
Site and soil assessors, designers, installers, servicing technicians,
(land owners)
 - Off-field key stakeholders technology suppliers, regulators/planners, advisers, educators/trainers, affected community

Achieving “excellence” in OWMS

- Best way to learn is to do
- I spent 20 yrs doing mostly theory
- Last 10yrs have done over 600 OWMS – learn something new every job. Every new learning opens up multiple question I had never thought to ask before.
- So what is this “excellence” if learning exposes more about what we dont know rather than what we do know???

OSET

MANAGEMENT ... of risks

Risk mitigation

Every site unique

Site specific S&SA and design

- Source
- Soils
- Drainage/hydrology
- Topography
- Sensitive ecosystems
- (Sub)surface waters
- Neighbours

O W **M** **S**

- Hazards
- Pathogens
- Nutrients
- Odour

Technology

Source – Treatment – Dosing – LAS

Effluent quality

Performance resilience

Energy consumption

Structural/ material quality

Electrical, component quality

Emergency storage/ cross contam.

Alarms, Dose volume

Manuals – Installation, O&M

Quality assurance – factory floor to site



Sustainable and effective OWMS (1547)

OSET NTP

SERVICE

End user/owner (\$)

- Convenient/reliable amenity service
- No odours/noise/pests
- Affordable (cap&op \$\$)
- No ponding/health risks
- No risk to stock
- Small footprint
- Not visually offensive

Installation
Servicing

Many people and disciplines involved – competence at all levels is required

End-users, owners, S&S assessors/designer, tech suppliers, installers, servicing technicians, regulators/planners, advisors to regulators/planners

MANAGEMENT ... of risks

Risk mitigation

Every site
unique

Site specific S&SA
and design

Source
Soils

Drainage/hydrology

Topography

Sensitive ecosystems

(Sub)surface waters

Neighbours

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The total
OWMS system

Many people and disciplines involved – competence at all levels is required

End-users, owners, S&S assessors/designer, tech suppliers, installers, servicing technicians, regulators/planners, advisors to regulators/planners

Criteria	NZ Standard Ref ¹	OSET NTP Strand 1
Nominate operating temperature and humidity range	2.4.3	X
Material and component durability	2.4.4, 2.4.5 and 2.4.9	X
Tank(s) water tight	2.4.9	X
Structural integrity of tank (s)	2.4.10, 2.4.11 and 3.8	X
Access lids requirements	2.4.7 and 3.6	X
Tank anchoring	2.4.4.	X
Tank compliance with AS/NZS1546 Pt1:2008	2.4.6 and 2.4.7	X
Emergency storage	2.4.8	X
Prevention of cross contamination	2.3.8	X
Electrical equipment durability	2.4.9	X
Effluent pump matched to LAS	2.4.10	X
Dose volume to match LAS requirements	CM10.1	X
Alarm system(s) meet criteria	2.4.11	X
Marking to meet minimal requirements	3.3.1 and 3.3.2	X
Foul air control	2.3.2(h)	X
Issuing of loading certificate	7.4.2 (d)	X

Colour code as follows:

AS/NZS 1546, Pt3, 2008	AS1546, Draft. Dec 15	AS/NZS 1547, 2012	AS/NZS 1546 Pt 1: 2008	No Standard
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Installation manual	C3	X
Installation training	2.2(b), 3.6	X
Operation and Maintenance manual (Home owner)	D2.2(a), D2.3	X
Servicing Manual (servicing technician)	D2.3	X
Servicing training	3.6	X
Provision of certification documents	C4	X
Manufacturing and assembling quality assurance	5.4	X
Delivery quality assurance		X
Treatment unit documentation and life-time tracking		X
Component documentation and life-time tracking		X
Warranty details		X
Performance		
Effluent quality (BOD, TSS, E.coli, FAC)	2.3.1	✓ (except FAC)
Effluent quality (Nutrients; N and P)	2.3.2	✓
Noise	2.3.3	X
Serviceable life	2.3.4	X
Energy consumption	2.4	✓

Colour code as follows:

AS/NZS 1546, Pt3, 2008	AS1546, Draft. Dec 15	AS/NZS 1547, 2012	AS/NZS 1546 Pt 1: 2008	No Standard
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How well are we doing?

- How close are we to “excellence”?
- Is there reason for more prompt action?

Complaints to Ecan : July 98 to Nov 2012

Number not relevant	19	11%
Consent issue	38	22%
Not enough information	16	9%
Unauthorised discharge	3	2%
Repeats	7	4%
Earthquake issue	4	2%
Surface water contam	5	3%
Failed disposal field	32	19%
Failure mode uncertain	47	27%
Total Number of complaints	171	100%
OWMS failure	103	
"Failures"/yr	13	
Total no. of OWMS	37,000	
% failure/yr	0.035%	



~800/yr
1 - 2 %

Cause of failure

- Designer/site assessor
- Technology/materials
- Installation
- Services
- Operation
- Other
- Combination of one or more of the above

Pond liner failures
Designer 60%
Installation 20%
Material 10%
Other 10%



Aim for an OWMS with 25+ yrs life

- Design competently
- Good quality technologies
- Competent installation and servicing
- User not to misuse/abuse their OWMS

- OSET NTP – ?????
- Competence Training – ?????

An excellent recipe book does not make a highly competent cook – the latter happens only as a result of passion, commitment, lots of experience and tutoring/mentoring by very experienced and knowledgeable cooks

what do we have as a foundation for excellence? (Ackn John Cocks).

- A suite of national standards for onsite wastewater management
- The Building Act means of compliance document G13, on-site system verification method and supporting provisions e.g. MBIE guidelines on plans and specifications
- Soils publications including S-map Online, topoclimate soils maps, Soil Bureau and landcare soil maps, and supporting soil descriptions
- OSET National Testing Programme.
- Ian Gunn's Onsite NewZ and Blog

- Differences amongst regional council rules for OWMS and lack of coherence
- A focus on the treatment system and lack of attention to the soil environment and the limitations on controlling inputs to the system i.e. important take a whole-of-system approach and a risk based approach
- Divergence in views about the function of the soil – some see it as an inherent part of the onsite system, others don't
- Great diversity in training and qualifications of people involved with design, construction, operating, and regulating
- Need for in-field monitoring of built systems and soil environments to understand design performance and assist in communicating this understanding.



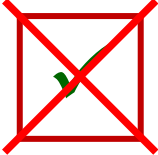
Are we being lazy?

Expecting “excellence” in site specific ,sustainable and effective OWMS, simply by ticking boxes from Appendix X?

Unprepared to do the hard work and learn from and listen to those with on-the-field experience?

Allowing strategies and practices to be driven by sideline and armchair “experts” and merchandise agents?

In Summary

- **Hot spots** and **cool spaces** – targeted strategies and practices?
 - Systems approach:
 - The physical system – source to LAS
 - The human system – the off-field and on field team
 - Implementing and managing competent risk assessment and mitigation.
 - Providing a service (distributed)
 - Each site is unique
-
- ❖ Accept that there is no easy or quick fix 
 - ❖ Broaden scope of OSET NTP – needs resourcing
 - ❖ Re-evaluate training
 - ❖ TA's, Regional Councils, with support from SWANS, advocate a total systems approach for high quality OWMS – recognising hot spots and open spaces

How do we obtain traction
for change when we already
have a heavy work load?

