Farm Dairy Effluent

Frequently Asked Questions

This document is intended to support the statutory requirements if the Tasman District Management Plan (TRMP) by answering the most frequently asked questions about farm dairy effluent. Where appropriate it may refer to other supporting advisory guides. It is important to note that not all the conditions you are required to comply with in the TRMP are covered in this document.

This document offers guidance to assist farmers with understanding and meeting their legal obligations in terms of farm dairy effluent in the Tasman region. The information is of a general nature, and provided as a guide only. It is not suitable for specific professional advice regarding a specific issue or situation.

Failing to meet these legal obligations may potentially carry criminal penalties in the District Court. This document is not intended to be a substitute for competent and appropriate legal advice in the event of enforcement action for non compliance.

This document is divided into the following sections:

A – Effluent storage volumes

B – Construction of storage facilities

C – Storage liners

D – Location of effluent storage

E – What are the rules?

F – Issues relating to different soil types

G – Managing effluent systems

A – Effluent storage volumes

A1 Why do we need storage?

- Tasman District Council is required under the Resource Management Act to ensure that water resources are protected for the future. This includes water availability, protection of aquatic ecosystems, human drinking, recreational and irrigation needs. If farms have insufficient or sub standard storage there is an increased risk of contamination of surface water, or (through a delayed impact) groundwater supplies. This contamination can either result by diffuse means from application or from point source via failing or leaking storage systems. Adequate storage increases the flexibility of effluent systems and reduces the risk of non-compliance because it allows a farmer to store effluent instead of irrigating when weather and soil conditions are not suitable for irrigation.

A2 What are the requirements for storage?

- There are no current Tasman District Council rules for a required size or number-of-days- of storage. However, there must be sufficient storage so the storage facility never overflows, and so that irrigation can be deferred when the soil is saturated. You may not irrigate to saturated soil because it is likely to result in ponding or run off.

- All stored dairy effluent must be contained on/within a surface that restricts the seepage of effluent contaminants into ground or surface water. Issues do not arise just at the dairy, wherever effluent is concentrated or stockpiled there can be contamination of water. Feed pad or stand-off pad effluent must be contained and spread appropriately. This requirement also includes effluent sludge removed from ponds, sandtraps and other holding facilities.

A3 what size storage is needed?

- The size of storage required is unique to each farm and is influenced by several factors. These include the local rainfall and evapotranspiration rates, topography and soils, catchment and herd sizes and nutrient loading rates. It is also influenced by how the farm chooses to manage effluent and water to fit with other aspects, such as calving, available labour and power supplies. The storage volume must compatible with the type of technology selected, for example solid separation and irrigator capability.

- Simply put, effluent storage must account for the volume of effluent generated less the rate of effluent irrigated and allow for the days when no effluent can be irrigated.

- Using a water balance model is a method to help estimate the required volume. This can easily be calculated using the Dairy Effluent Storage Calculator developed by Horizons Regional Council and Massey University. This programme uses a 30 year historic data set and soils information for the region. The Farm Dairy Effluent Design Code of Practice recommends using an accredited designer/installer to calculate specific storage

requirements to meet individual farm circumstances. The system must also comply with current legislation (see section E).

- It is important to remember that even if a system is compliant at inspection at a given point in time, if management factors are altered on the farm then the system may no longer be sufficient and could later be deemed non-compliant.

A4 Will all industry providers give the same size calculations?

- Is it possible that industry providers may provide different sized storage volumes. This may be because the technology they are recommending has different performance parameters which will impact on management of the system. One of the benefits of using the FDE storage calculator is the ability to view different management scenarios for your farm.

- It is critical that the measurements that are entered into the programme are accurate. It is also critical that if you agree to a system you are capable of managing it as designed, for example the length of time spent irrigating.

- It is also advisable to develop a contingency plan for effluent management should a problem occur with the system.

A5 How many litres of effluent is produced per cow over 24 hours?

- The standard figure for dung and urine production of an average dairy cow is 70 litres per day.

- Ten per cent of this is generated during milking, i.e. seven litres per cow. When accounting for the effluent generated in the cow shed, the volume of wash down water must also be accounted for which ranges between 35-100 litres per cow depending on the efficiency of the system.

- The use of a water meter on the water supply allowed calculation of the actual volume of wash down water being used.

- Dung and urine on feed pads is accounted for on a pro rata basis per cow i.e. 70 litres divided by 24 multiplied by the number of hours on the feed pad. If water is used to wash the feed pad, this volume also needs to be accounted for.

A6 How much rainfall is collected in the pond during a 75mm rainfall event?

- The surface area of the pond influences how much rainfall is collected into the pond. The smaller footprint the pond has, the less rain is collected.

- For example in a 75mm rainfall event, a pond of 2000m^2 would collect 150m^3 of rainfall compared to 45m^3 in a 600m^2 pond.

- It is therefore important to account for rainfall collection when designing and managing an effluent system.

B – Construction of storage facilities

B1 Do I need to pay an engineer to permeability test my ponds?

- Tasman District Council supports IPENZ Practice Note 21 – 'Farm Dairy Effluent Pond Design and Construction' in getting a suitably qualified person and/or experienced pond constructor to provide specific written details to support that the pond is constructed to the appropriate standards. These details should at least include the design, construction and material used. This will help provide evidence that best management practices were adhered to and may spread the liability if a problem occurs in the future.

- Clay liners have a number of complex issues which may result in the sealing standard not being met. It is therefore recommended that new clay ponds are constructed as recommended by IPENZ Practice Note 21, which includes being overseen by a suitably qualified person and issue of a supporting producer statement.

- If you have an existing pond and a compliance officer suspects that is it unsealed you may be required to prove that the pond is sealed to the required standard. If you have no construction records available that prove the pond is sealed you may need to hire an engineer to perform a permeability test which can cost several thousand dollars. It may be most cost effective to upgrade your storage facility than prove it is sealed. If you cannot provide information proving the pond is sealed further enforcement action could result. This could include a notice ordering you to cease using an unsealed holding facility.

B2 I have a digger, can I build my pond myself?

- There are no rules that state you can not construct the pond yourself. However, in order to achieve a safe and compliant pond the construction work needs to meet a high standard. Consideration needs to be given to the materials used and the level of compaction in order to achieve the permeability requirements. The farmer needs to be able to prove compliance with the pond sealing standards, which is likely to require engineer signoff. Farmers may not be able to establish appropriate sealing if they build the pond themselves.

- If the site is not properly selected and pond properly constructed there can be issues with groundwater intrusion. It is recommended, under best management practice, that experienced and qualified professionals are employed in the design and construction process. These professionals will be familiar with the 'Farm Dairy Effluent Design Standards and Code of Practice' as published by Dairy NZ, and the 'IPENZ Practice Note 21 – Farm Dairy Effluent Pond Design and Construction' and follow up-to-date information about pond construction as it becomes available.

- However, it should always be remembered that, even if professionals are referred to or engaged, the ultimate responsibility for the construction and compliance falls to the farmer.

B3 Do I need consents for earthworks or other matters to construct an effluent storage pond?

- Possibly – some effluent storage ponds are very large, requiring extensive earthworks to both construct the dam and to clay line the impoundment (where required). Consents may be required by the Council for the construction earthworks, the damming and diversion of existing watercourse depending on the scale, nature and location of the impoundment and associated earthworks.

- Even if no consents are required, appropriate erosion and sediment controls must be installed and maintained for all earthworks to be a permitted activity.

- If the maximum potential (the dam crest level) exceeds 20,000m³ and 3m depth then a building consent is also required from Tasman District Council. Consent requirements in relation to earthworks, damming and diversion are very site and project specific and you should always seek specific written advice from Council Planners or Building Consent staff at Tasman District Council at the earliest possible stage when planning your effluent storage pond. Our staff are happy to help you with information on requirements.

- You may also need to meet additional requirements from your Council so you should consult with them before constructing any effluent pond or tank.

B4 How do I find a good effluent system designer/advisor? Who will give me the best advice?

- DairyNZ in conjunction with Regional Council's and industry representatives have produced the 'Farm Dairy Effluent Design Standards' and 'Farm Dairy Effluent Codes of Practice', and the 'IPENZ Practice Note 21 – Farm Dairy Effluent Pond Design and Construction' which can be accessed from www.dairynz.co.nz. Professionals involved in dairy effluent systems should adhere to these and any technical documents as released. It is recommended to use only qualified and experienced professionals who can give you some written design guarantees to show that they system would be fit for purpose providing best management practices are adhered to.

- An accreditation system has recently been established primarily for effluent land application system designers. As companies are approved by the scheme they will be listed on the website www.effluentaccreditation.co.nz. Many of these designers will have been through the Massey University course on effluent system design. However, it will take time to get all companies registered, so it is important to consider this when making your decisions. Chartered professional engineers can also be found at www.ipenz.org.nz/ipenz.

B5 Do contractors used for construction of effluent facilities have to be certified?

- Ultimately the responsibility of the effluent system falls to the farmer. If a farmer engages the services of an effluent system designer, the roles and responsibilities of engaging and overseeing contractors can be shared as agreed with the designer.

- It is recommended that whoever is responsible for engaging contracted services ensures they have given clear instructions to the contractor, that the contractor has experience of

the work they are carrying out and a written contract or agreement is in place outlining the details and responsibilities of both parties.

- DairyNZ in conjunction with InfraTrain and the Opus Environmental Training Centre are developing short training courses on farm dairy effluent pond design and construction for effluent service provider contractors which are now available. For more information see www.dairynz.co.nz.

B6 Can Tasman District Council audit my system and give me advice on upgrading it?

- Council compliance staff are not technical specialists in effluent system design or construction and therefore cannot provide specific technical design advice. They are skilled in assessing the system for non-compliance and will be able to tell you if your system is compliant at that point in time. Dairy companies and DairyNZ are also key drivers in industry standards so can provide some on farm services and access to advice. There are also a number of independent consultants who provide on farm advice around effluent systems. Some Council staff are familiar with available systems and can give you some advice as to where the information you require can be obtained.

B7 If you have an existing two pond system already is it best to combine to make one pond or not?

- Each two pond system should be assessed individually as to whether it is suitable for use in an upgraded effluent system. If the system was previously part of a consented discharge to water treatment system, then it is likely to be located near a watercourse. If this is the case it is worth considering whether it is an appropriate location for a storage facility as current recommendations are to site facilities a minimum of 20m away from a watercourse. Siting facilities further away from watercourses helps lessen the risk of significant contamination should the storage facility fail for any reason.

- Electing to have a two pond system can provide some additional management benefits. For example the ability to carry out maintenance work on individual ponds, increased pumping potential by pumping from multiple ponds at optimum times, and the potential to manage effluent of different nutrient and water values in different ways to maximise on farm efficiency.

- Two pond systems could incur additional costs associated with construction, maintenance and management. Therefore it is still important to assess ongoing management and financial implications when selecting a system.

B8 What are the options for separating rainwater from the effluent system?

Diverting rainwater from the effluent system can help reduce the amount of storage required and the volume of effluent to manage. Options to consider are:

- Gutter and divert existing roofs and other sealed areas to minimise the catchment area.

- Use cambers and cross drains to divert rainwater off raceways to prevent it collecting in yards.

- Have a separate system for collecting diverted rainwater from cleaned yards. This may only have a low nutrient content so while it may not be of an acceptable standard to be discharged to waterways, it could be used for irrigation.

- There are also opportunities to make use of rainwater in other aspects of the farm system DairyNZ have developed a guidance book 'Smart Water Use on Dairy Farms'.

B9 How do I construct ponds on peat?

- Construction on peat can be very challenging and each site may have different issues. It is recommended to engage a suitably qualified person or engineer to help establish the most appropriate design to avoid any substance or water intrusion issues.

- This would also be the case for other challenging soils, high water tables and steep topography.

B10 Can you use retired effluent ponds?

- If an old effluent pond is brought back into use it must meet the same compliance standards as stated by the Council.

- There may be some construction issues around relining an old pond due to gas and oil composition. It is recommended to consult with a professional before commencing any work.

- Tasman District Council supports the recommendations in 'IPENZ Practice Note 21 Farm Dairy Effluent Pond design and construction' surrounding pond siting. Some old ponds may not meet good practice guidelines and careful consideration should be given as to whether a new pond would be the best solution for the farm.

C – Storage Liners

C1 Are clay liners acceptable?

- Tasman District Council stipulates a standard regarding the sealing of the material selected for effluent facilities. It does not currently determine exactly what these materials are, as technological advancements can introduce new products.

- With regards to clay, it is possible to achieve the sealing standard, however there are a number of associated challenges with clays.

- Clay should be professionally tested to establish if it has the necessary properties. If suitable clay has to be imported then this can be costly. Clay also requires specific compaction techniques to ensure sealing. This again should be carried out by a professional. Clay liners can susceptible to cracking when empty, which can compromise the sealing and result in leaks.

- Stirring of ponds, wind and wave action can also wear and erode the clay liner.

C2 What types of liners are there and what is the best one?

- There are a number of products currently being used in New Zealand for effluent ponds and tanks. DairyNZ's 'Farm dairy effluent systems – A farmers guide to building a new effluent storage pond' summarises the pros and cons of clay, concrete and synthetic liners.

- Other materials, such as metal, have been used in effluent systems overseas. DairyNZ in conjunction with technical experts are reviewing the suitability of materials to meet regional council sealing standards and it is recommended to regularly check their website and publications library for any additional information related to effluent systems.

D – Location of effluent storage

D1 Where should effluent storage be located?

- DairyNZ's 'Farm dairy effluent systems – A farmers guide to building a new effluent storage pond' provides useful information on the factors to consider when siting a pond.

- Tasman District Council supports this information and IPENZ recommendations regarding locating new effluent facilities a minimum of 90m away from boreholes and 20m from surface water.

D2 How far does a pond need to be from a road or the neighbours?

- Tasman District Council rules specify that any odour associated with effluent must not cause an adverse effect past the property boundary.

D3 What are New Zealand food standard distance for effluent facilities?

- Currently food standard require a separation distance of 45m or 10m for a fully sealed and vented tank. However there may be other requirements and/or exceptions to these regulations so it is important to confirm these regulations before construction.

D4 What is groundwater and why is it so important?

- Groundwater provides a long term store for drinking water and water feeding into our waterways and wetland habitats. Contaminated and degraded groundwater (below world drinking and/or Australia New Zealand Environment Council standards) can have health and biodiversity implications. Depending on water table depth and geology it can take decades for pollutants to pass through soils to groundwater, therefore current monitoring data may not be reflective of the intensification of dairying that has occurred since the 1980s. The implementation of mitigation measures to prevent further degradation is necessary to ensure that there are safe water supplies in the future.

D5 How do we find out about groundwater levels?

- Groundwater levels are very site specific and can vary considerably even over a small area. As a starting point, gathering information based on the depth of local boreholes can be

useful. This information can be supplied by the Tasman District Council or more detailed information maybe held by local geotechnical specialists.

- Before commencing any construction works it is recommended to dig a test pit in the area selected for construction, to a depth of at least 1m below the finished depth of the pond. Consideration should also be given to seasonal variations when digging test pits.

E – What are the rules?

E1 What do I have to do to be compliant?

- Any discharge of effluent to water is illegal unless it is specifically authorised by a resource consent. For oxidation ponds with resource consents to discharge treated effluent to water the conditions in the individual consent must be met.
- Discharges to land are only lawful if all of the conditions of the Tasman Resource Management Plan permitted activity rule 36.1.2.3 are met:

TASMAN RESOURCE MANAGEMENT PLAN
Rule 36.1.2.3: Discharge of Bird or Animal Effluent to Land

The discharge of:

1. Dairy shed effluent; or
2. Up to 5 cubic metres per day of effluent from housed animals or birds; or
3. Up to 5 cubic metres per day of effluent from animals or bird processing activities;

Onto land is a permitted activity that may be undertaken without a resource consent, if it complies with the following conditions:

a) There is no discharge in the Waimea Plains Aquifer Protection Area.

b) There is no discharge or run-off of effluent into any water or riverbed.

c) There is no discharge or run-off of effluent into any open sinkhole.

d) Contingency measures are in place to avoid discharges to water in the event of system failure.

e) There must be no discharge of effluent within:

   i. 20 meters of any surface water body, or coastal marine area;

   ii. 20 meters of any bore for domestic water supply;

   iii. 10 meters from any adjoining property

   iv. 50 meters of any dwelling on an adjoining property.

f) Any effluent storage facilities are sealed so as to prevent any contamination of water by seepage.

g) The application of effluent is:

i. At a rate of not more than 200 kilograms of nitrogen per hectare per year by itself or in combination with any other applied fertiliser; or

ii. At a rate not resulting in an elevation of groundwater nitrogen concentration.

h) Discharge of effluent is only onto land with a vegetative cover over 90 percent of the ground surface or immediately prior to sowing a crop.

i) The discharge does not create an offensive or objectionable odour discernible beyond the property boundary.

j) The application of effluent is not at a rate which results in ponding on the land surface for longer than one hour.

k) The discharger must provide such information as may be requested by the Council to show how the conditions of this rule are being met and, where the discharge has not occurred at the same location previous to March 1 2006, this information must be supplied by the discharger before first commencing the activity.

E2 What is the effluent storage sealing requirements and how do I meet it?

- Current Tasman District Council rules state that storage facilities need to be sealed to prevent seepage of effluent. In order to achieve this, the permeability of the sealing layer must not exceed 1x10-9 metres per second (m/s). This sealing standard generally applies to clay materials, however if an alternative type of liner is selected then it should be of comparative quality. This information should be supplied by the manufacturer.

- In layman's terms, clay sealing is related to the volume of effluent in the pond, the thickness of the clay liner and the permeability of 1x10-7m/s leaked 100 mm per day compared to 0.1mm per day from a 600mm thick liner at a permeability of 1x10-9m/s. This difference is a significant point source pressure on water resources in Tasman, and is why the more stringent sealing limit is in place.

- Compliance sealing can be achieved by a range of materials, for example, concrete, geotextile membranes, and some type of clay soils which do not crack easily and have a suitable clay and plasticity level. To ensure compliance it is strongly advised to have a geotechnical soil analysis test performed and to carry out standard compaction methods during the construction of clay lined ponds.

- Any liner material may be insufficiently sealed if not installed and managed according to the manufacturer's guidelines.

E3 How is the ponding of effluent defined?

- The simplest definition of ponding is when stamping a gumboot in applied effluent causes splashing to occur. Effluent applied at a rate no greater than 25mm to a soil that is not already saturated should not lead to ponding; however, depending on soil type or saturation level the application rate may need to be significantly less than 25mm.

E4 What happens if I have a one-off incident?

- The effluent system should be designed, constructed and maintained to ensure failures are rare and management of the system should respond quickly if an incident occurs. However one-off incidents such as a pipe burst, the pipe blowing off the irrigator, the irrigator stalling in the paddock or overflowing holding facility due to an unexpected pump breakdown do happen on farm.

- The Resource Management Act (RMA) contains specific statutory defences that protect people from prosecution in certain circumstances. In summary, if the action or event that led to the prosecution was beyond the control of the person, and the effects of the action or event were adequately remedied or mitigated, then the person may have a defence. Note that the full wording of these defences are specified in section 341 of the RMA. We recommend farmers seek independent legal advice to clarify how these defences may apply to their specific situation.

- A decision on what enforcement action (if any) will occur depends on a number of factors. These factors include:

  - the size, scale duration and toxicity of the discharge
  - the quality of the environment affected
  - the severity and duration of the effects
  - the deliberateness or negligence associated with the incident
  - the farm or farmer's prior compliance history
  - the attitude or cooperation shown
  - the degree of profit or benefit the person may have gained from the offending

E5 What happens when my farm is inspected by Tasman District Council?

- If a property is inspected for compliance then it will be given a compliance status for the entire site as listed below:

  As with all dairy farm inspections undertaken by Council, farms once assessed were placed into one of three categories that described their level of compliance. The criteria for assigning these categories are:

- **Compliant:** No non-compliance with any Resource Consent conditions or any sections of Rule 36.1.2. 3 of the TRMP were found at the time of inspection.

- **Non-compliant**: All issues that did not fit into either "compliant" or "significantly non-compliant" e.g. technical non compliance with no adverse effect.

- **Significantly Non-compliant:** Criteria for assigning a grade of significant non compliance, and examples of situations that would meet the criteria are presented below. Please note: this list is not exclusive and serves as a guide only.

Criteria	**Examples**
Unauthorised discharges that have entered water (Ground or surface water)	• Overflowing ponds or sumps into surface water • Overland flow /runoff into surface water • Irrigating over surface water • Race/feedpad/standoff pad runoff into surface water • Discharges in breach of consent or plan rule conditions, and where adverse effects are visible/measurable/likely: e.g. o S107 considerations e.g. change in colour or clarity after mixing o Exceeding ammonia limits o Exceeding NTU/SS limits o Exceeding BOD limits o Exceeding faecal limits o Exceeding ground water nitrogen concentration limits
Unauthorised Discharges that may enter water (Ground or surface water)	• Significant surface ponding • Irrigating when soil conditions are too wet • Discharge without using an irrigator (e.g. pipe end discharge) • Sludge dumping in close proximity of any water • Discharges in breach of consent or plan rule conditions, and where adverse effects are visible and/or measurable and/or likely: e.g. o Exceeding nutrient application rates o Exceeding effluent application depths/rates
Breach of abatement notice/enforcement order	• Any breach of an abatement notice/ enforcement order
Objectionable effects of odour	• Serious adverse effects of odour have occurred
Multiple non compliances on site with cumulative effects	• Multiple minor discharges into a sensitive environment

These compliance terms are use by all Regional Councils when reporting on dairy compliance.

- Any non-compliances are noted and kept on the property record, and may have a bearing on any enforcement action decisions relating to further non-compliances. You will be informed of any non-compliances identified, even if no enforcement action is taken.

- Generally there are three levels of punitive enforcement action based on the severity of the case. A formal warning, a $750 infringement notice, or a prosecution. A prosecution results in a court appearance where significant penalties are available to a sentencing judge and

convictions may be entered against a person or company. Offences against the Resource Management Act are criminal offences and carry a maximum penalty of two years imprisonment or a $300,000 fine for an individual and $600,000 for an entity 'other than a natural person' (e.g. a company).

- An abatement notice or enforcement order are other non-punitive enforcement options that may be required to give direction to remedy non-compliance or environmental effect.

E6 What happens if my worker/sharemilker breaches the rules?

- Each non-compliance case is assessed on an individual basis and the responsibility and liability will be attributed accordingly. If a worker who is responsible for the day-to-day management of the effluent system has been fairly informed and educated in how to run the effluent system in compliance with Tasman District Council rules, and that worker applies effluent in breach of the rules, then the worker is likely to be held to a degree but not in entirety, to account. However, if the infrastructure or instruction provided to the worker is deemed an inadequate to manage the effluent the liability can shift back to the owner of the property.

E7 What happens if the effluent system I have to work with cannot comply?

- If the infrastructure provided to the worker is inadequate to manage the effluent then the owner of the property is likely to be held to greater account. It is the owner's responsibility to provide compliant infrastructure. It is the worker's responsibility to inform the owner of the infrastructure that needs upgrading or replacing. It is sensible to make a note in a diary or keep a record of what the owner has been told and when. However, it is still the worker's responsibility to take all possible action to prevent non-compliance occurring. When starting milking on a new farm either as owner, share milker or worker, it is important to assess the effluent system and be confident that it is fit for purpose. If the system is not compliant then any person working with that system has the potential to be held accountable.

- Tasman District Council recognises that it takes time to engage finances and the services of appropriate professionals to ensure a high standard effluent system, and that construction is weather dependant. The council cannot ignore any non-compliance that occurs during that process, but all favourable steps to mitigate effects would be considered in the making of enforcement decisions.

E8 Why are there rules, and what are they?

- The Resource Management Act (RMA) was enacted to promote management of natural resources, soil, water and air, to ensure they are sustained for future generations. Tasman District Council, based on scientific evidence and regional monitoring data, developed a regional plan in 1998 and which was made operative in 2011. It contains limits and compliance rules aimed at achieving the requirements of the RMA relating to management of discharges of contaminants. The current regional plan rules regarding the disposal of farm dairy effluent have been largely unchanged since then (1998). If new research, data

and scientific evidence shows that current rules are not meeting the desired outcome or requirements of the RMA, then a variation or more stringent regulations can be enforced.

- The rules are designed to ensure that a baseline of practice is adhered to.
- The rules are not an 'ideal target' to try to get close to, but maximum allowable limit to ensure resource protection.

E9 Does Tasman District Council keep changing the rules?

- The current rules have been largely unchanged since 1998.
- Since 2009 a summary of all the rules related to effluent irrigation have been issued to all dairy farmers prior to their annual inspection. These rules have not changed.
- The focus on dairy effluent monitoring and enforcement has increased in recent years as non-compliant dairy farms have been identified, and monitoring has shown continuing degradation of water quality. The rules have often been misinterpreted or have been monitored at a lower priority but the inspection process is continually reviewed to account for the increasing significance of environmental issues and pressure from the public.
- Tasman District Council has been working with relevant industry groups and the farming community to provide better advice on how to achieve compliance and decrease the risk of environmental impacts. As more scientific evidence becomes available regarding the impacts of dairy effluent on natural resources, specific rules could be reviewed to reflect current best practice.

E10 If I am non-compliant will I be prosecuted and how does the enforcement process work?

- Once your property has been selected for monitoring a site visit will occur. If non-compliance is detected on site, photos, samples and written statements may be taken.
- You have certain rights in law when a criminal offence is being investigated. In order to ensure you are aware of these rights, an enforcement officer may caution you prior to asking you for information about what has happened and why. The purpose of the caution is to ensure you are aware of your rights and obligations in law.
- All the information gathered as part of the investigation will be presented by one of the staff members that performed the site inspection and as a minimum one other resource officer and a manager. All the information and details taken on site will be discussed and the most appropriate course taken. If prosecution is recommended, a panel of senior managers at the council will consider the investigation results and make a final decision as to whether prosecution will take place. This process is designed to have a consistent approach to all enforcement action.
- Prosecution can be a lengthy and costly procedure. This method of enforcement is reserved for serious instances of non-compliance. A large number of aggravating factors are considered, such as if a direct discharge to water has occurred, or if there has been an

element of deliberateness or negligence. Prosecution cases, although they may be prominent in the media, are a very small proportion of the total enforcement action taken.

- The enforcement options for non-compliance are as follows

  - Formal warning – a written notice notifying the farmer of which rule has been breached and the standard that needs to be met in future.

  - Abatement notice – a notice that requires you to cease an action or take an action.

  - Infringement notice – this is the equivalent of an environmental 'speeding' fine where a breach of the Resource Management Act (RMA) has occurred. The value of the fine is set in statue at $750 for discharge offences. An infringement notice can be issued for every day the non-compliance occurs. Separate infringement notices can be issued for individual breaches of the Act, and they can be issued to different parties for the same offence.

  - Enforcement order – a court order from the Environment Court requiring an action to be undertaken.

  - Prosecution – a prosecution will lead to a district court appearance and may result in a conviction and sentence. The maximum penalties available under the RMA are two years imprisonment or a $300,000 fine for an individual and $600,000 for an entity 'other than a natural person' (for example, a company).

E11 Can Tasman District Council tell me if my effluent plan will be compliant with its regulations?

- Tasman District Council staff are not qualified to audit the design of an effluent system and confirm whether or not it will meet regulations.

- The best advice can be gained from independent effluent consultants and designers, dairy supply companies, DairyNZ and other dairy industry organisations.

- Tasman District Council compliance inspections currently look at whether an effluent system is compliant at a given point in time based on inspection date. Factors such as climate conditions (for example prolonged wet weather), a change to the farm system (for example an increase in cow numbers or introducing a feed pad), or mis-management of the systems may result in the farm being non-compliant. Where it is clearly obvious that your farm is at risk of non-compliance, Tasman District Council will draw your attention to this fact. Other organisations, such as Fonterra, will provide you with information and recommendations for designing and managing your system so that you can be compliant throughout the season.

E12 I was told to fill in my ponds and now you want me to build them again, will you ever make up your minds as to what you want?

- Tasman District Council rules have encouraged farmers to use land treatment in preference to the discharge of treated effluent from pond systems. At the specific request of the dairy industry the design decision of the land application system was left to the farmer to allow for innovation. The farmer, through industry consultation, is required to identify what is

needed – including storage, area to be irrigated and irrigation equipment – to achieve the outcomes defined in the rules that haven't changed.

- Our monitoring and conversations with farmers consistently identify that a lack of storage is a significant factor in the majority of non-compliance. Tasman District Council has drawn this to the attention of farmers to help them to correct any shortcomings of their system design before non-compliance occurs. This is consistent with Tasman District Council's general advisory role.

- Although these rules have remained basically the same for many years, Tasman District Council cannot guarantee that they will continue in their current form. Plans under the RMA must be reviewed at least every 10 years and if they are not achieving their purpose, changes to the rules can be expected.

E13 What are the safety requirements around ponds?

- Tasman District Council has no governance of safety regulations but does support that effluent systems meet any current and future safety rules as issued by the Ministry of Business, Innovation & Employment under the Health and Safety in Employment Act 1992, and industry guidelines.

- Effluent storage facilities should be fenced as required under the farm's health and safety policy.

F – Issues relating to different soil types

F1 How do soil types affect application?

- Soil properties vary considerably and there are over 140 soils types in the Tasman region alone. The texture and structure of soil can influence how effluent moves through the soil profile. This is also influenced by slope, artificial drainage and compaction resulting from pugging or mechanical pressures.

- Soils with greater than seven degrees slope (that is when the ball starts to roll), impeded drainage or artificial drainage are generally risky soils for effluent application because the volume and speed of application can create problems with surface run off or bypass flow.

- Well drained land doesn't have the same issue with volume and rate as the liquid can move evenly through the soil profile. However it can become risky if the nutrient content of effluent is high and applied at a time of low plant growth. This is because the nutrients will leach through the soil faster than the plant can use it.

- More information on soils can found at www.landcareresearch.co.nz/databases. Tasman District Council also has some information on its website www.tasman.govt.nz/environment/land.

F2 What are the storage options for peat soils?

- Peat soils provide a number of construction challenges due to water levels and potential slumping risks. The assessment of options needs to be site specific and it is recommended that consultation is made with a suitably qualified engineer or geotechnical expert when designing and constructing farm infrastructure.

G – Managing effluent systems

G1 What is best for the environment, treatment ponds or land application?

- Utilising dairy effluent on growing plants offers environmental and financial benefits by providing a supply of nutrients to the plant and introducing additional organic matter to the soil, improving soil structure and the associated rooting properties. However, if used in excess it can add to the risks of ground and surface water pollution.

- Treated effluent has a reduced nutrient and bacterial load going to the receiving water body, so it currently provides a solution in areas where land application is impractical. However, treatment systems need to be properly sized, sealed, and managed to provide the level of treatment that is not harmful to the receiving environment. Discharge of treated effluent to water requires a consent and must meet the conditions of that consent. Advances in land application technology, such as low application rate systems, mean there are very few situations where land treatment is not viable.

G2 What is the best effluent system out there?

- Industry providers of effluent systems are constantly reviewing and upgrading the products they offer. Each farm is managed differently and there is no right or wrong system, so long as it meets the regulations and provides what you need. As every farm is different it is advised that when considering a new or upgraded system you should engage a qualified and experienced professional to assess the needs of the farm and create a written plan. This should consider the current effluent output and whether the farming intensity will be increased during the lifespan of the system, for example, increasing cow numbers or building a feed pad. You should then consult with a number of system designers to find a solution that suits your particular farm, fits within the farm budget and on-farm labour and any geographic or climatic limitations of the farm. A system should be designed to account for changes within the farm business during the lifespan of the system, which could be 10-20 years. The system should minimise the risk of non-compliance and allow for any mitigation if non-compliance does occur.

- An accreditation system has recently been established primarily for effluent land application system designers. As companies are approved by the scheme they will be listed on the website www.effluentaccreditation.co.nz, it is advisable to ask advisors for the relevant qualifications and references.

G3 How do I irrigate on hump and hollow land?

- The rules state that no ponding or surface run off of effluent shall occur, so if hump and hollow land is included in the effluent block then application rates should be matched carefully to soil infiltration rates. It may be possible to achieve this through the use of low rate irrigation systems which are frequently removed.

G4 What is the best way to apply effluent?

- Effluent application equipment should be matched to soil infiltration rates and the nutrient content of the effluent applied to ensure compliance with Tasman District Council's rules, and to optimise the value of effluent through efficient timing and application rate.

- Applying high nutrient content effluent as close to the root zone as possible and during the growing period will help minimise nutrient losses during the application process. However effluent with a low nutrient content can be applied as a higher rate and technology should be matched based on irrigation principles.

- Building flexibility into an application system provides the opportunity to maximise on-farm efficiency. Using suitable storage, adjustable machinery, or incorporating different types of technology either permanently or via contracted services, provide farmers with the ability and choice to do this.

G5 What do I do with effluent sludge from my sandtrap/feedpad/pond?

- Effluent sludge from these areas contains a concentrated form of nitrogen and bacteria and therefore poses a risk to waterbodies. The sludge should be managed in an appropriate way to eliminate risk of surface run off or groundwater leaching. Application of effluent sludge has to comply with the maximum loading rates (for example 200kg N/Ha/year). If the application rate of nitrogen exceeds this then it becomes a non-compliant activity and a resource consent must be applied for. Because of the concentration of nutrients in sludges lower application rates are required to stay within these limits. Further research is being carried out on the benefits of differing types of effluent so best management practices may be reviewed as scientific data becomes available. It is recommended that sludge is tested at the time of application and accurate information is recorded in nutrient budgets so the benefits of these applications on the farm can be measured.

G6 How big does the effluent block need to be?

- The effluent block should be sized so that it is compliant with Tasman District Council's application rules. These specifically relate to nitrogen and volume, where nitrogen must not exceed 200kg N/Ha/Yr.

- It should also be sized based on the other nutrients present in the effluent. A nutrient budget and routine soil testing can help prevent an excess of nutrients building up in the soil. This can be a particular problem with potassium.

G7 What is meant by green water flood washing?

- Green water flood washing is the reuse of effluent to wash down areas such as feedpads.
- The ability to use green water requires certain conditions be met to minimise the risk of contamination in the milking area. It is important to confirm these regulations with your milk supply company and the New Zealand Food Safety Authority – 'NZCP[1] Code of Practice for the Design and Operation of Farm Dairies'.
- Reusing water on farm can help minimise the amount of water entering the effluent system.

G8 How do I manage odour and gaseous loss from effluent?

- Odour and gaseous loss in influenced by the dry matter and organic content of effluent. Current research into emissions is limited particularly in relation to the New Zealand climate. Some current management options include:
  - Site effluent facilities away from neighbours and property boundaries.
  - Check wind direction before spreading effluent and time application accordingly.
  - Stir ponds to improve the aerobic breakdown of organic matter within the pond.
  - If solids are separated from the effluent consider the management plan for the solids as well as the liquid.
  - Regularly empty sludge build up from storage ponds.
  - Use additives to help with the breakdown of organic matter in storage ponds.
  - Another option not currently widely used in New Zealand is the use of permeable covers with gas collection and impermeable covers.