Additional Report on

Bio Security Points

on Animal Movement Route

Carried Out By

Edward Hamer LTD

Specialist Consultants To Agriculture & Meat Industry

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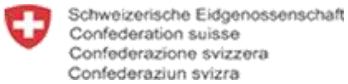
The Report was Commissioned by SDC Funded Mercy Corps Georgia Implemented Alliances Lesser Caucasus Programme



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1. Introduction

After identifying the Animal Movement Route as a key constraint for the development of the Georgian sheep sector and as a lynchpin for the development of a national animal disease control strategy, the Swiss Development Cooperation funded Mercy Corps Georgia implemented Alliances Lesser Caucasus Programme has been advocating the improvement of the AMR at all levels of government and civil society and private sector stakeholders through the programme Advisory Committee since 2012.

In spring 2014, the issue was publicized in the programme facilitated Eco Films Documentary 'The Road' which has furthered the importance of the route and the movement of animals for the agricultural sector in Georgia. Complex multi stakeholder coordination, the result of years of facilitation between local government, regional government, relevant Ministries, the private sector and the empowered Shepherds Association led to the construction of the bypass route for the notorious Tsintskaro Village blackspot in Tetritskaro municipality where the million head of livestock passed directly through the village. The bypass route now managed by Local Self Government has been a real time example how the consolidation of different stakeholders can lead to real solution in livestock transhumance related issues.

The Tsinskaro precedent accelerated the decision-making process and the Ministry of Agriculture and the Ministry of Economics, the National Food Agency, the Shepherds Association and the Municipalities agreed to work closely together in the crucial process of the demarcation and re-appropriation of the land of the AMR itself. The AMR is owned by the Ministry of Economics, however years of neglect had seen the sale of parts of the route to private landowners. A special commission of the Ministry of Economics will decide to swap the contested land of landowners who have registered ownership on AMR areas or find alternative land and finalize the official registration of the Route.

In October 2014 ALPC KK contracted international expert Edward Hamer Ltd to design an infrastructural model for the AMR. The simple, practical recommendations prepared by the expert – 11 action points for improving the basic infrastructure of the AMR with drawings and costings were presented for discussion to the relevant stakeholders of the agriculture at ALCP KK Advisory Committee meeting in December 2014. The Minister of Agriculture approved the infrastructural plan and started the process of identifying the strategic points where the existence of proper AMR facilities was essential. Following the request of the Minister of Agriculture Otar Danelia, Mr. Hamer was recently invited in Georgia for validation of the project in March 2015. The consultant fed into work in progress on Northern stages of the route, re-appropriation of land, re-routing of the AMR from main roads, decisions on the locations of biosecurity points and environmental considerations. After visiting all the suggested sites for placing the Biosecurity Yards and Water Points together with representatives of the Ministry of Agriculture and National Food Agency – this **ADDITIONAL REPORT on BIO SECURITY POINTS on the ANIMAL MOVEMENT ROUTE** was prepared and infrastructural plans and building ready drawings finalized for Kakheti and Kvemo Kartli.

This report provides information on the 7 Bio-Security Points (BSP's) for the AMR, on the whole officially registered AMR of Georgia. The construction of five BSP's is already planned with two more in the pipeline. The successful implementation of the first five BSP's will allow for the replication AMR infrastructure in North part of the AMR as well.

Meanwhile, in March, 2015 a Memorandum of Understanding was signed between the Minister of Agriculture, the National Food Agency and Mercy Corps. Within the framework of this memorandum the ALCP will facilitate the building of two Bio-security yards with water points on the Animal Movement Route in Kvemo Kartli region, with three Bio-security yards in Kakheti financed from the State Budget.

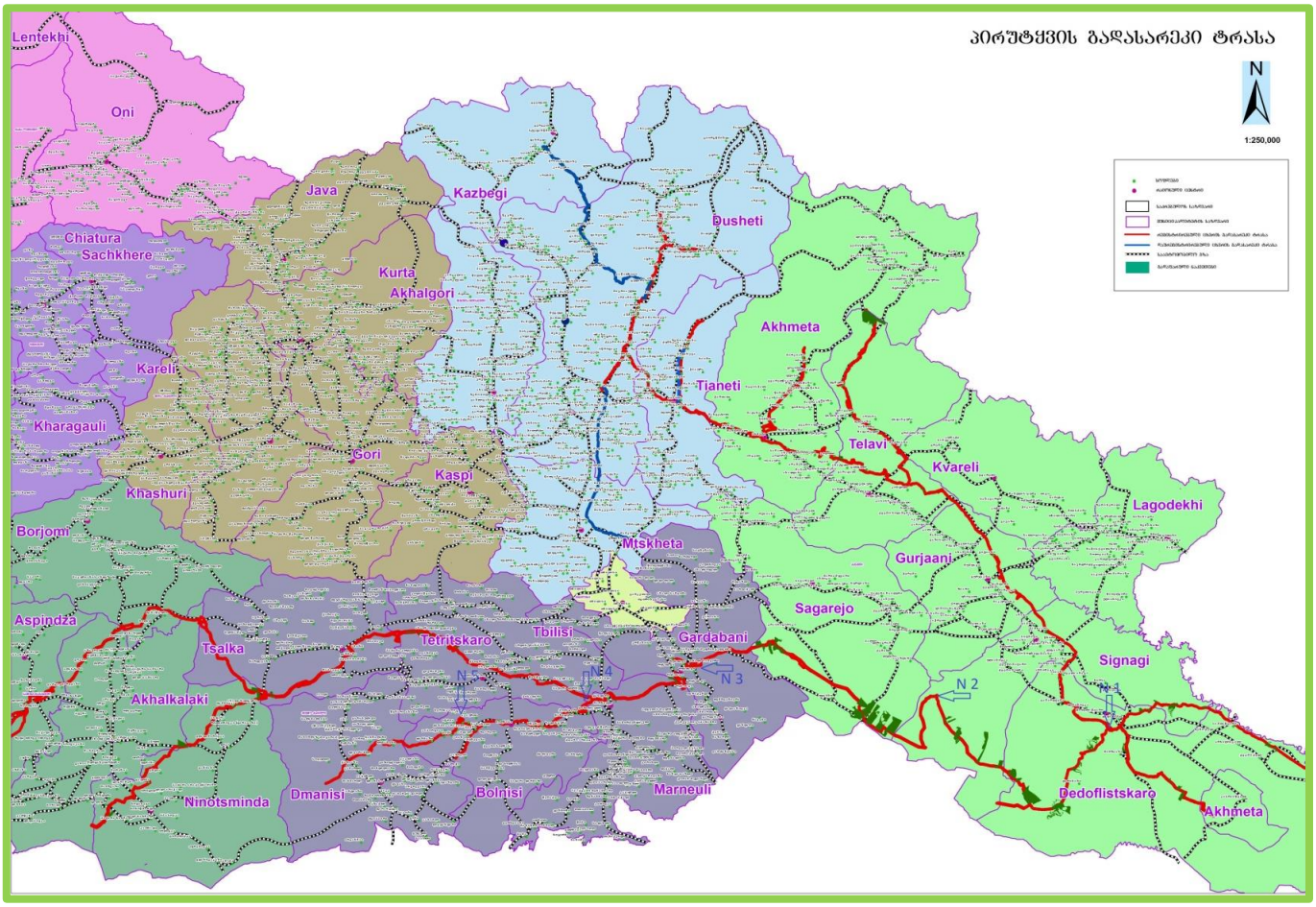


Figure 1: Latest Government Map of AMR showing five confirmed Biosecurity Points.

2. Rationale

Further to the main report carried out in October 2014 the infrastructural development of the AMR and in particular, Bio Security Points (BSP's) has been advanced through ALCP facilitation with Government Ministries and Departments in Georgia, with the NFA and Shepherds Association to a stage where closer detail is needed in the terms of estimated numbers of livestock through the route and at individual BSP's. For this we have visited 7 suggested sites along the AMR and we make recommendations on suitability and services required at each site to accommodate envisaged numbers

3. Re-Design of Bio Security Yards

Due to the much larger than previously estimated stock numbers using various BSPs we have re-designed to allow for two sheep dip baths in the highest stock number points. We have increased the length of sheep swim baths to allow for greater liquid volume to avoid fast depletion of contents. We use figures from UK standards of 5 lt water per sheep, as Georgian sheep are carrying less wool that that of UK sheep the volume per head should allow for more than sufficient water in busy periods. We have added to drawing a sump in sheep dip bath to allow for vacuum cleaning and removal of spent chemical mix. We will add a volume measurement for the sheep dip to know the volume depleted and extra chemical to be added.

- We have been told there is no need to include a sheep vaccination race as stock will be vaccinated 3 weeks before AMR transition begins also to remove cattle race and crush from drawing.
- We have designed the construction materials for the slab yards and for the hot dipped galvanized gates and barriers.
- We will add to holding yards a fall in surface to a side gutter leading to a liquid manure pit to be vacuum cleaned.
- Water volume needed at each site has been estimated under each site heading the fill pipe to dip bath needs to be min 75 to 100 mm dia. To allow for fast replenishment.
- We will reduce to holding yard capacity to 1000 head of sheep and increase the draining yard capacity to 1000 to avoid any contamination of land.

4. Management During AMR Period

The whole rational behind the BSP,s is to remove and eradicate tick borne diseases in the animal population of Georgia therefore we see it as necessary to ensure that all stock ,sheep ,cattle and horses are treated on the AMR

The BSP,s have been positioned with the help of local knowledge to ensure all stock passes through one BSP during the transition, however some control in the form of paper record needs to be kept in form of a licence or other. This way any herdsmen cannot avoid treating their stock.

When the dip baths become over contaminated with mud, feaces etc they must be vacuumed cleaned before fresh water and chemical in re-introduced. This will need day to day control management. Also ensuring yards are kept clean and in a fit and proper manner.

We would suggest that banned dip chemicals such as Cypermthrin not be allowed due to the ground and water contamination issues associated with it. This particular chemical has been banned in most Western Countries of the World . The only available chemical to use is a **Diazone base product**, which is an “Organo-Phosphate”(OP) based product. Lime maybe added to neutralize waste dip, *see neutralizing dip* Section 6.

5. List of Sites

Site 1: Close To Magharo Village

On AMR close to a bridge the suggested site is slightly elevated from a nearby river bed. River water is the proposed source of water it however seems very dirty carrying a high percentage of silt and may not be suitable for dipping as there is possibility of "silting up the dipping bath". The position would be better if a bit further from river. The access road needs to be up graded to allow construction materials and transport to the site. Possible max numbers of sheep 200,000 per season 7-10,000 per day, need to add second sheep swim dip bath to accommodate the numbers, plus cattle shower. Estimated required water storage on site 50,000 litres. Disposal of spent dip must be done in an environmentally safe manner.

Site should be Right Hand Side of track away from river

Site 2: Close To Dedoplistskaro Township

The site is very unsuitable due to its position in narrow valley. The AMR passes through the small valley and has a water drinking point and as thus is a sea of mud which will contaminate the dip bath liquid very quickly and the closeness to the water course is worrying for potential contamination of the ground by chemicals. An alternative site was mentioned approx. 500 mts up the access road but water will have to pumped from the source in the valley possibly with a solar pump. Estimated numbers are 100,000 per seasonal movement or 5,000 sheep per day. One dip bath may suffice but also needs a cattle shower. Est water tank on site storage 25,000 litres

Too Muddy in narrow valley

Better Site above fence line shown here

Site 3: Shakriani Bridge

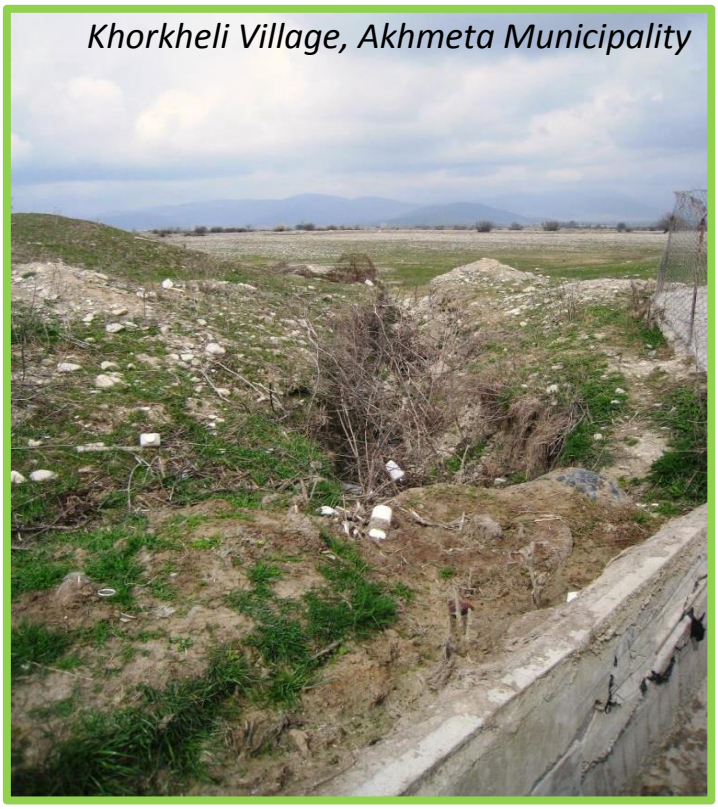
Site of a previous constructed dipping site from communist times. Although on a river plane, is flat open grassed area and as suitable as can be found for purpose. Need to pump water from river to storage tank Suggested daily numbers 5-7,000 sheep /day. Will need two swim baths. Cattle shower not needed at this point as few cattle using this route. Est water storage on site 35,000 litres.

Old Dip needs up grading

Good clean area available

Site 4: Private Dipping facility at Khorkheli Village

This should not to be recognised with any seriousness as this is a very poorly constructed dip and an environmental disaster due to river bed contamination of the river course of dangerous chemical residues and toxins. A new facility needs to be constructed, sheep numbers per day were not available. But if one single bath suffices at present then I suggest one will be OK in the future. Water storage on site Est at 20,000 litres. Cattle numbers are very small so cattle shower not needed can be hand sprayed.



Drain out for Dip goes to River

Private Dip needs total up grade

Site 5: Algeti River

Good site, needs to be on slightly elevated land away from river flood plain. Suggested numbers are 200,000 sheep during movement period or a max capacity of 10,000 sheep per day so will need two dip baths. Access road and entry /exit onto bridge will need upgrading to allow construction vehicles and materials to site and allow waste chemical removal from site. Need to add cattle shower here. Est. water storage on site 50,000 litres.

Access Road & Bridge approach needs up grading

Site of BSP needs to be to Right Hand Side of photo away from Flood Plain

Site 6: Tandzia Village

Suggested site is in a good position but will need excavating, level area also looks rocky so need to build in costs for this. Estimated capacity is 80,000 sheep per movement period. Water availability is from river approx. 500 mtrs away, need to have solar pump from river to tank . On site storage tank Est size at 20,000 litres at 4000 sheep per day.

Good Site on small plateau away from Water Course

Site 7: Close to Rustavi Akhali Samgori

Close to river, land looks very porous, danger of chemical "run off" to water course. Water in small river very saline may be too saline for use with chemicals in dipping system. Were told locally that even deep boreholes are extremely saline and livestock will not drink it. Water sample taken from river for analysis to confirm this. (See Analysis following page) According to the laboratory report water tested is undrinkable even for cattle with consequences on blood content of calcium, magnesium, iodine, phosphorus etc. and also may cause Diarrhoea and Dysentery *(please see the next page: the report on water test results).* Need re-think on water availability possibly piping in town water, particularly for stock drinking water. Estimated sheep numbers per movement period 200,000 or up to 10,000 sheep per day will need two dip baths plus cattle shower Est water tank on site storage 50,000 litres.

AMR with approach Track shown

Site in fore ground needs to be as far away from River as possible

SANITATION, HYGIENE AND MEDICAL ECOLOGY INSTITUTE

შ.პ.ს. გ. ნათაძის სახელობის სანიტარიის, ჰიგიენის და სამედიცინო ეკოლოგიის სამეცნიერო კვლევითი ინსტიტუტის საგამოცდო ლაბორატორია

აკრედიტაციის მოწმობა N: GAC-TL-0041
(ძალაშია : 2018-02-04)

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02. 04 2015 წ

Laboratory Report #292

Sample Information (amount): Surface Water (2 Liter)

Costumer Name: International Non-Governmental Organization "Mercy Corps"

Date Sample Received: 27.03.2015

The Place Sample was Taken From: Rustavi Municipality, Akhali Samgori Village

The purpose of the analysis: chemical analysis of surface water

Parameter	Measurement Unit	Result	Testing Method
Physical and chemical properties			
Water Hardness	Mg/L	42	
Calcium (Ca^2)	Mg/L	501	
Magnesium (Mg^2)	Mg/L	206,72	
Dry Remains	Mg/L	3100	

According to the laboratory representatives, the water sample is probably not a surface water but water coming from lower rocks.

***Water Hardness** – 42 Mg/L is a very bad index and is not drinkable even for cattle.*
The standard index for drinkable water hardness is - 7.

***Calcium** is a definer of water hardness and in case of the water sample the share of calcium was 501 Mg/L, against the norm which is 140.*

***The Magnesium** (Mg2) in water sample was 206. Normal doze is - 85.*

***Dry Remains** (in the other words saltiness) in water sample was 3100. Normal doze is less than 1500.*

As stated, water tested in the laboratory is undrinkable even for cattle and causes violation of blood contents of calcium, magnesium, iodine, phosphorus etc. and also may cause Diarrhea and Dysentery.

Photo's of Gates and Closures of Pens

Centre Post in Circular Forcing Pens

Top Hinge on Gate turned up side down

to Prevent Theft

Bottom Hinge on Gate

Centre Post Top Rotating Hinges

Centre Post Bottom Rotating Hinges

Typical Anti Tamper Gate Fastener

Typical Anti Tamper Gate Fastener

6. Disposal of Used / Waste Dip

Under regulations of use and disposal in the UK the Environment Agency recommends that waste dip be treated with a reducing enzyme to break down the chemical. It can then be spread onto land a minimum of 200 meters from any water course, gutter, channel or drain onto deep soil area and not on any free draining light soil area. See *neutralizing enzyme* section below.

We attach a Copy of UK Government Dip Disposal

Sheep dip

Sheep dip contains very toxic insecticides. It is important to store, use and dispose of dip, and manage freshly dipped sheep correctly to minimise the risks of polluting water.

If you use sheep dip you should follow the **sheep dip code of practice.** Specifically you should:

- have a certificate of competence if you want to buy sheep dip and carry out or supervise dipping
- only use products authorised by the **Veterinary Medicines Directorate** and follow the manufacturer's instructions
- buy only enough sheep dip concentrate to meet your immediate needs
- store unused sheep dip concentrate in a secure location
- inspect sheep dip baths and draining areas regularly to make sure sheep dip can't escape and any drips and splashes run back into the dip bath
- site your sheep dipping facilities at least 10 metres from a watercourse and more than 50 metres from a well, spring or borehole
- keep freshly dipped sheep in a holding field until they are dry
- rinse empty sheep dip containers at least 3 times and crush them so they can't be used again – see the guidance on **Voluntary Initiative website** by searching for BPG container cleaning
- dispose of waste sheep dip legally and as soon as possible after dipping
- have a **permit from the Environment Agency** if you want to dispose of waste sheep dip by spreading it on land

More information about sheep dipping is available from the **Veterinary Medicines Directorate.**

If you want to treat waste organophosphate sheep dip with an approved organophosphate degrading enzyme, you will need to **register an exemption** with the Environment Agency and operate within the conditions set out in the exemption.

We attach here the Article on the use of Cypermethrin

Cypermethrin Sheep Dip – a campaign victory

Following the Buglife campaign to ban sheep dipping with synthetic pyrethroids, in 2006 the Veterinary Medicines Directorate (VMD) suspended the license to sell the Synthetic Pyrethroid (Cypermethrin) for sheep dipping on environmental grounds with immediate effect. On 3 March 2010 Cypermethrin was permanently withdrawn from sale in the UK.

"Slopping highly toxic chemicals about the countryside is an outdated and outmoded practice. Pour-on and injectable alternatives cause much less environmental destruction. We hope that our rivers and meadows are allowed to recover" said Matt Shardlow, Chief Executive .

Sheep (c) Buglife

Synthetic Pyrethroid sheep dip information

- It is estimated that 1.5 billion aquatic invertebrates have been saved every year that Cypermethrin sheep dip has been banned – excellent news if you are a fish or a bird!
- At least 26 million litres of cypermethrin sheep dip were used in 2005.
- Synthetic pyrethroids are 1000 times more toxic to wildlife than previously used chemicals.
- A few drops of Cypermethrin dripping from a wet sheep into a stream will kill all the invertebrates for up to 10 kilometres downstream, with knock-on impacts for fish, the rest of the aquatic ecosystem and fishing businesses.
- Buglife estimates that at least 1,000 miles of rivers were ecologically destroyed by sheep dip pollution every year it was used.

- The cypermethrin sheep dip, as well as generally damaging the environment, was also driving species towards extinction. In 2004, 5,000 White-clawed crayfish (an internationally endangered species) were killed by sheep dip pollution in Cumbria's River Mint; and the very rare caddisfly Glossosoma intermedium, once found in three little rivers, is now only found in one, apparently as a result of poisoning by sheep dip.
- Every year over 400 million litres of sheep dip had to be thrown away. Disposal was basically carried out by spraying the sheep dip onto fields. Cypermethrin is used as an agricultural pesticide and hence causes persistent damage to the populations of invertebrates in the 'sacrificial' fields.
- "Sheep dip chemicals caused around one third of all freshwater Environmental Quality Standards (EQS) failures with between 2000 and 2003. Failures occured most frequently in areas of sheep rearing (Wales, Northumbria, Kent and in areas associated with the processing of fleeces (West Yorkshire). "
- Photo of banned Cypermethrin dip used in Georgia

Photo of banned Cypermethrin Dip used in Georgia

Global Excellence in Animal Health

Bimeda

Gold Fleece

60% Diazinon

INDICATIONS

Sheep: For the prevention and treatment of Blowfly Strike, Ticks, Keds, Lice, and Scab infestations.

BENEFITS

- ✔ 49 day meat withdrawal
- ✔ Approved for the control of sheep scab, fly strike,lice,ticks and keds in one treatment
- ✔ Approved for the control of sheep scab in a single treatment
- ✔ Can be used to control external parasites throughout the year
- ✔ Can be used curatively or preventatively
- ✔ Over 30 years experience of this active ingredient
- ✔ Low volume of dip required
- ✔ Reliable storage, simple stocking

PACKAGING

List No	Unit Package	Case Size
1GOL006	5L	1

See reverse for Administration & Dosage

www.bimeda.co.uk

TECHNICAL INFORMATION

Bimeda

OSMONDS GOLD FLEECE Sheep Dip, 60%w/w Concentrate for Dip Solution

60% Diazinon

PRESENTATION
A clear yellow coloured liquid containing Diazinon 60% w/v

TARGET SPECIES
Sheep.

INDICATIONS FOR USE, SPECIFYING THE TARGET SPECIES
Sheep: For the prevention and treatment of Blowfly Strike, Ticks, Keds, Lice, and Scab infestations

CONTRAINDICATIONS
None

SPECIAL WARNINGS FOR TARGET SPECIES
Sheep should never be dipped on a full stomach, when the wool is wet, or when they are heated, tired, thirsty, or suffering from wounds or open sores. Choose a cool dry day and dip early in the morning.
Rams and fat sheep should be assisted through the bath and lambs dipped separately from the ewes.
Care should be taken to ensure that the sheep do not swallow or inhale any wash.
As this is an organophosphorus sheep dip, an interval of at least 14 days should elapse between dipping and dosing with any drench, etc. containing levamisole or an organophosphorus compound.

TO AVOID POST DIPPING LAMENESS
Post dipping lameness may occur when the sheep are dipped in dirty wash, or wash which has been allowed to stand in the bath overnight or longer. It is important that the dip bath should be emptied and thoroughly cleaned at the end of each days dipping or earlier if it becomes very dirty during the day's dipping.

SPECIAL PRECAUTIONS FOR USE
i. **Special precautions for use in animals**
For external use only.

One pair of gloves, one laminated dispensing kit instruction card and one laminated sheep dipping safety card are supplied with each container of Osmonds Gold Fleece Sheep Dip.
The dip concentrate container is fitted with a sealed closure incorporating a male inlet Quick Acting Shut-off coupling (QASC), a female outlet QASC and a draw tube that extends from beneath the outlet QASC to the marked corner of the container. When the container is fitted correctly into the dispensing kit, the tilt mechanism allows withdrawal of the maximum amount of dip concentrate from the container. **The dip concentrate in the container must be dispensed directly into the dip tank only by using the Osmonds Gold Fleece Sheep Dip Dispensing Kit**. Follow the instructions provided with the dispensing kit for fitting it onto the container and for dispensing the dip concentrate safely.

A re-usable dispensing kit must be purchased in order to use Osmond's Gold Fleece Sheep dip. Each kit must contain the following components:
- 1x dispensing gun with tubing and 2x connectors (1x male and 1x female) attached,
- 1x dispensing base-plate plus 1x dispensing tube with 1x female connector attached and 1x rinsing tube with 1x male connector and 1x non-return valve attached,
- 1x laminated card, bearing instructions for the correct use of the dispensing kit.

The product must be dispensed only by use of this kit, in accordance with the instructions on the dispensing kit laminated instruction card. If part-used containers of the product are to be kept for future use, the dispensing kit must be removed, washed and stored as per the instructions, and the original cap must be replaced securely on the product container.
The dispensing kit must not be used for any other purpose.
The instructions for use of the dispensing kit read as follows:

Osmonds Gold Fleece Sheep Dip concentrate must be dispensed only by using this kit. Read the directions for use printed on the product container before using this kit. It is essential that the advice on wearing protective clothing is strictly adhered to at all times when handling new or part-used containers of sheep dip concentrate, when using the dispensing kit and when washing used concentrate containers and the dispensing kit. This kit is re-usable. It should not be used for any other purpose. It should be washed and stored as directed on the instruction card.

DISPENSING DIP PRODUCT
i) Preparation for dipping. Place the dip concentrate container into the cage on the base-plate so that the coloured corner of the container label is aligned with the coloured corner of the base-plate. This will tilt the container to allow withdrawal of the maximum amount of dip concentrate. Place the dispensing base-plate on level ground at the edge of the dip tank and feed the dispensing hose through the hole in the base-plate so that the hose hangs down into the dip tank. Where
splash-boards are fitted the base-plate should be sited so that the dispensing hose is fed through an existing gap in the barrier. For extra security thebase-plate can be attached to a solid object near to the edge of the dip tank using twine or wire threaded through the cage at the rear of the base plate

ii) Initial fill of dip concentrate into dip bath (see Fig. A): Connect gun inlet hose (2) to container outlet valve (1) and connect gun outlet (3) to dispensing hose (5). Carefully pump the trigger of the gun until the gun reservoir and outlet tubes are full of product. Then dispense the required number of 60 ml volumes of dip concentrate for initial charging of the dip tank (see container label for details). **The dispensing gun is fixed to deliver 60 ml only and is sealed for safety reasons. It must not be disassembled.** When filling the gun reservoir, to ensure accuracy, it is important to wait until the plunger has returned completely before dispensing the dip concentrate. It is recommended that the operator keeps a tally of the number of volumes dispensed. After every ten x 60 ml dispensings, using a dry gloved finger, press down on the top of container inlet valve (4) for a few seconds (see Fig. B). This is to allow air to enter the container to relieve any negative pressure.

iii) Replenishment of dip bath with product: (see Figures A & B)
Replenishment with one 60 ml delivery of concentrate treats 12 sheep.
Baths less than 2250 litres (500 gallons) **must be** replenished after every 36 sheep dipped (3x60 ml deliveries from the dispensing gun) and the bath must be filled with water to its original level.
Baths of 2250 litres (500 gallons) or more **must be** replenished after every 96 sheep dipped (8x60 ml deliveries from the dispensing gun) and the bath must be filled with water to its original level.

Approaching the end of the days dipping, when replenishing the dip bath for the final time, carry out the first 1x60 ml delivery for a bath less than 2250 litres (or the first 6x60 ml deliveries for a bath greater than 2250 litres) and allow the gun to refill by releasing the trigger. Then disconnect gun inlet hose (2) from container outlet valve (1) and connect gun inlet hose (2) to hose (6) ensuring that the non-return valve (7) on the end of the hose is secured to the clip (8) on the carrying handle (see Fig. C). Now pump the gun two more times and the final 120 ml of dip concentrate will be delivered into the dip bath. Replace transit cap onto the part used container. **Now follow instructions on how to wash and store the dispensing kit (see 'Washing Instructions').**

iv) To change containers during dipping: If a container is emptied during dipping disconnect gun inlet hose (2) from empty container outlet valve (1). Immediately re-connect to a new container and carefully pump the trigger of the gun until the reservoir is full. When disconnected, do not try to operate the delivery gun until the correct connections (step ii) have been made. Store the empty container safely until the end of the day's dipping.
Do not rinse empty containers until the end of the day's dipping (see 'Washing Instructions'). This is to avoid the possibility of the introduction of water into part-filled dip concentrate containers. Even very small amounts of water can affect the long-term stability of the dip concentrate.

WASHING/CLEANING GUN RESERVOIR, HOSE AND EMPTY CONTAINERS
i) At the end of a day's dipping you must wash all empty containers to remove residual dip concentrate prior to disposal. The washings must be disposed of into the dip tank. Place the empty dip concentrate container into the cage on the base-plate so that the coloured corner of the container label is aligned with the coloured corner of the base-plate exactly as in step (i) of 'Dispensing Dip product' instructions.

ii) To wash out the product container when it is empty (see Fig. D): Disconnect the gun outlet hose (3) from the dispensing hose (5). Connect the gun outlet hose (3) to the container inlet valve (4) and connect gun inlet hose (2) to hose (6). Then immerse the non-return valve (7) in a bucket containing at least 5 litres of clean water. Pump 3 x 60 ml (180 ml) of water into the container and shake the container to rinse it of any remaining dip concentrate.

iii) To empty the product container of rinse water (see Fig. E): Disconnect the gun outlet hose (3) from the container inlet valve (4). Connect the gun outlet hose (3) to the dispensing hose (5). Disconnect the gun inlet hose (2) from the hose (6). Connect the gun inlet hose (2) to the container outlet valve (1). Pump the gun repeatedly to remove all of the rinsings from the container into the dip-tank.
Repeat the rinsing and emptying processes two more times to ensure that the product container is empty of all traces of product before disposing of the container.

iv) To wash out gun reservoir and hose: Having rinsed the empty containers, or at the end of a days dipping when no dip container has been emptied, you must then rinse out the gun reservoir and hose to maintain it in working order. Before following the washing procedure, if a part-filled container remains you must remove it from the cage and store it safely with the cap replaced. If not already in place, connect gun inlet hose (2) to hose (6). Ensure that gun outlet hose (3) is connected to dispensing hose (5). Then immerse the non-return valve (7) in a bucket containing at least 5 litres of clean water. Pump at least 10 x 60 ml through the gun and the tubing into the dip tank to ensure that the gun reservoir and hosepipes are clear of dip concentrate.

v) To clear gun reservoir and hose of water: Remove the non-return valve (7) from the water and secure it in clip (8) on the kit handle. Pump the dispensing gun until the gun reservoir and hose are completely clear of water. Disconnect gun outlet hose (3) from dispensing hose (5) and gun inlet hose (2) from hose (6). Rinse the outside of the dispensing hose and valves (2) and (3) by immersing in a bucket of clean water, then agitate and rinse all valves. Dispose of the rinse water in the dip tank. Rinse valves (5) and (6) by spraying with water so that the rinsings drain into the dip-tank, taking care to avoid splashing yourself or others. Repeat this process two more times. Then store the dispensing kit in the original carton, in a dry place below 25oC as follows: Connect gun outlet hose (3) to dispensing hose (5) and connect gun inlet hose (2) to hose (6). Then secure the non-return valve (7) in clip (8) on the kit handle. This allows the air to dry the gun reservoir and hose system. A part-used container can be stored (with its cap replaced) in the base-plate cage.

vi) Disposal: The dispensing kit has been shown in tests to withstand 5 years of simulated use. If you do need to dispose of the kit, rinse the gun and hoses thoroughly as in steps (iv) & (v). Dispose of the dispensing kit in accordance with guidance from your local waste regulation authority.

Dangerous to fish and other aquatic life. Do not contaminate surface waters. Harmful to game, wild and domestic birds and mammals. Do not allow access to dilute dip.

ii. Special precautions to be taken by the person administering the veterinary medicinal product

Before Dipping
Diazinon is an organophosphorus compound. Do not use if under medical advice not to work with such compounds. If you have previously felt unwell after using a product containing an organophosphorus compound, consult your doctor before working with this product and show the doctor the product label.

Use only in a dip bath that is well designed and hazard free.

Check that all those involved in dipping operations are adequately trained and competent.

Keep children well away from all dipping operations.

Make sure that everyone has the recommended protective clothing and insist that they wear it. Ensure you have spare protective clothing available in case any items become damaged.
The recommended protective clothing is:
Face Shield (when handling dip concentrate)

Bib apron (over boiler suit) or waterproof coat (PVC or nitrile)

Gloves
(Non-lined or
flock-lined, PVC or nitrile,
heavy duty gauntlet style - 0.5 mm thick
and at least 300 mm long)

Waterproof leggings/trousers
(PVC or nitrile to be worn outside your boots)

Wellington boots

During and Immediately After Dipping:
- Do not use concentrate in an enclosed area and avoid breathing the vapour. Dipping should be carried out in a well-ventilated area. preferably outdoors.
- Always use the Osmonds Gold Fleece dispensing kit provided when dispensing concentrate.
  Before leaving the work area wash and remove protective clothing and do not smoke, drink, eat or use the toilet during dipping operations.
- Always wash hands, face and exposed skin immediately after leaving the work area
- Protective clothing should be washed each day after dipping operations to prevent build-up of chemicals in the material. Wash dispensing kit and dipping equipment in accordance with the instructions at the beginning of this section. Check and replace any worn or damaged items of protective clothing.
- Immediately wash off sheep dip, particularly dip concentrate, if it gets on your skin or in your eyes.
- Immediately remove heavily contaminated clothes and wash contaminated areas of skin – see further instructions below under **"MEDICAL ADVICE TO USERS"**. Wash or destroy heavily contaminated clothes immediately.
- If you feel unwell after using this product consult your doctor and show your doctor this label. Treat any cases of heavy contamination as an emergency. You should go straight to hospital after removing contaminated clothing, and rinse with plenty of water areas of skin which came into contact with sheep dip.
- If sheep dip has been swallowed go straight to hospital and take this label with you.

Handling sheep in the weeks following dipping:
It is good practice not to shear sheep in the 3 months after dipping. Handle sheep as little as possible after dipping as dip residues remain on the sheep for some weeks. If you need to handle sheep, wear coveralls and wellington boots. If the sheep are wet also wear waterproof trousers and coat. Always wash hands with soap and water after handling sheep or fleece, and before eating, drinking or smoking.

Medical Advice to Doctors:
Poisoning from organophosphorus compounds in sheep dips results from blockage of acetylcholinesterase, with a resultant over-activity of acetylcholine. Symptoms include headache, exhaustion and weakness, mental confusion together with blurred vision, excessive salivation and sweating, cramp-like abdominal pain, chest tightness, diarrhoea, constricted pupils, and bronchorrhea. These may develop for up to 24 hours after exposure.

Severe poisoning can include general muscle twitching, loss of co-ordination, extreme difficulty with breathing and convulsions which may lead to unconsciousness in the absence of medical treatment. Treat symptomatically and seek urgent hospital transfer if poisoning is suspected.

Advice is available from the National Poisons Information Service. (Either access TOXBASE on the Internet/NHS web at http://www.spib.axl.co.uk or telephone: 0870 600 6266). Further information for health professionals is contained in MS17 entitled "Medical aspects of work related exposure to organophosphates" and is available from HSE books on tel: 01787 881165 or fax 01787 313995.

Adverse Reactions (frequency and seriousness)
Post dipping lameness may occur when the sheep are dipped in dirty wash, or wash that has been allowed to stand over-night.

TECHNICAL INFORMATION

Bimeda

Use during pregnancy, lactation or lay
If dipping pregnant sheep is essential they should be gently lowered into the bath and assisted out.
There have been no reported complications in pregnancy or lactation.
Not suitable for use on sheep that are being milked for human consumption.

Interaction with other medicinal products and other forms of interaction
As this is an organophosphorus sheep dip, an interval of at least 14 days should elapse between dipping and dosing with any drench, etc. containing levamisole or an organophosphorus compound.

Amounts to be administered and administration route
To prepare the bath:
Measure the required volume of cold soft water into the bath. Fit the Dispensing kit (available from your Osmonds Gold Fleece supplier) to the dual valved lid of the container as described in section 4.5 above.
Dispense the required amount of product into the dip tank via the dispensing kit in the proportion of 600ml Gold Fleece to 900 litres (200 gallons) of water (i.e dispense 10 x 60ml amounts of dip concentrate into the dip tank – see section 4.5 above. Stir the bath thoroughly from end to end before commencing dipping and dip on the day the dip is prepared.

To replenish the bath
Baths of less than 2250 litres (500 gallons).
Add 180 ml of dip after every 36 sheep dipped and restore the bath with water to its original Volume (i.e dispense 3 x 60ml amounts of dip concentrate into the dip tank – see section 4.5 above).

Baths of 2250 litres (500 gallons) or more.
Add 480 ml of dip after every 96 sheep dipped and sufficient water to restore the bath to its original volume (i.e dispense 8 x 60ml amounts of dip concentrate into the dip tank see section 4.5 above). When a bath becomes foul, however, always empty it and refill with fresh dip. Dispose of all wash remaining at the end of a day's dipping.

Fouling of the dip wash reduces dip effectiveness. Therefore, do not dip more than 1 sheep per 2 litres of dip wash that was in the bath at the start of dipping. For example, if the total volume of wash in your dip bath was 1000 litres (220 gallons) you should not dip more than 500 sheep no matter how many times you have replenished and topped-up the bath. You should then empty, clean and recharge the bath with fresh dip wash.

Dipping: Sheep must be totally immersed in a sheep bath and all parts of the sheep except the head and ears, must remain immersed for not less than one minute. Keep the sheep moving in the bath and plunge the head under at least once. Never hold the head down or the sheep will be liable to swallow or inhale some of the wash.

Control of Ticks: Ewes:- Dip ewes in Spring before lambing. If the infestation is severe dip again 6 weeks later (excluding young lambs). Hogs and other sheep should be dipped as soon as possible after ticks appear.

Not to be mixed with any other dip.

Overdose
Care should be taken not to overdose.
Overdosing may invalidate the stated meat witholding times as in 4.11 below.

Withdrawal Period(s)
Meat & Offal: 49 days from date of last treatment
Milk: Not suitable for use on sheep that are producing milk for human consumption

PHARMACOLOGICAL PROPERTIES
Diazinon is an organophosphorus compound. It is effective against a wide range of insects. Organophosphorus insecticides are both contact and stomach poisons.
They act by combining with the neutralising cholinesterase at the nerve ganglion of the insect. Cholinesterases remove acetylcholine.
Two types of this enzyme are recognised, the first, true acetylcholinesterase, is largely specific in its action and is found mainly in erythrocytes, in muscles and in the nervous system. The second, pseudocholinesterase, a non-specific enzyme capable of hydrolysing a wide variety of esters, occurs in plasma and the nervous system. Some organophosphorus compounds inhibit one of these enzymes more than the other but few are entirely specific. Owing to their lipid solubility, they are rapidly absorbed.
Used as a sheep dip at a concentration of 0.025%, diazinon is active locally in the skin and wool.

PHARMACEUTICAL PARTICULARS
List of excipients
Emulsogen IT
Shellsol R

Incompatibilities
Incompatible with copper sulphate and its solutions.

Shelf Life
Shelf life of veterinary medicinal product as packaged for sale: 2 years.

Special Precautions for Storage
Do not store above 25°C.
Store in original container, tightly closed, in a safe place.
Not to be mixed with any other dip.
Wash out container and dispose of safely.
Keep away from food drink and animal feeding stuffs.

Nature and Contents of immediate packaging
A brown coloured emulsifiable concentrate packed in a rectangular 5 litre tin container. The dip concentrate container is fitted with a non-removable sealed closure incorporating a male inlet Quick Acting Shut-off coupling (QASC), a female outlet QASC and a draw tube that extends from beneath the outlet QASC to the marked corner of the container. When the container is fitted correctly into the dispensing kit, the tilt mechanism allows withdrawal of the maximum amount of dip concentrate from the container. **The dip concentrate in the container must be dispensed directly into the dip tank only by using the Osmonds Gold Fleece Sheep Dip Dispensing Kit.**

Special Precautions for the disposal of unused veterinary medicinal product or waste material, if any
It is an offence to permit any poisonous, noxious or polluting matter to enter any river, stream or watercourse.
Any unwanted product should be disposed of by a licensed waste disposal contractor.
Empty containers should be washed out three times, as directed in the washing instructions provided with the Dispensing Kit and the rinsings placed into the dip bath. Because the container is a closed, sealed system, it must be punctured before crushing. The dispensing kit has been shown in tests to withstand 5 years of simulated use. If you do need to dispose of the kit, rinse the gun and hoses thoroughly as directed in the washing instructions provided with the Dispensing Kit. Dispose of rinsed containers and the dispensing kit in accordance with any guidance from an appropriate waste regulation authority.
To dispose of used sheep dip an authorisation under the Groundwater Regulations 1998 is required. To apply for an authorisation contact the Environment Agency (EA) or the Scottish Environment Protection Agency (SEPA) or the Environment and Heritage Service of the Department of the Environment for Northern Ireland (EHS/DENI). Alternatively spent dip wash should be disposed of by a licensed waste disposal contractor.

Market Authorisation Holder:
Name or style of business and permanent address registered place of the holder of the Marketing Authorisation.

Cross Vetpharm Group Ltd., Broomhill Road, Tallaght, Dublin 24, Ireland

Marketing Authorisation Number: Vm 12597/4028

Legal Category: POM-VPS

Package Quantities: 5 Litres

A full product SPC is available on request from Bimeda or alternatively can be found on the VMD website

Use Medicines Responsibly. Noah.co.uk

For further information, contact Bimeda UK at
2 Bryn Cefni Industrial Park, Llangefni, Anglesey, Wales, LL777XA.
01248 725 400

Neutralizing Enzyme for OP Dips

The neutralising enzyme for sheep organo-phosphate is no longer manufactured however we have spoken to the UK Enviroment agency and it is recommended that the **waste dip is treated by adding lime to raise the Ph level.** The recommended quantities are 25 kg of a high calcium type per 1000 litres of dip. This is stirred in and the residue can be land spread by means of a vacuum tanker on land at least 200 meters away from any water course on deep loam type soil (not permeable river type)

Cattle Shower Mechanics

We attach date sheet for pumps and type of spray nozzles We recommend that a tractor type PTO (power take off) pump is used on a tractor supplied from the Government machinery centres. Details and costs as follows See attached data sheet .

Pump 1700C giving 170 lt/Min at 13.8 bar	£282.00
PTO adaptor	£35.00
20mt of 25mm suction/delivery hose	£60.00
Foot valve/strainer	£20.00
In line filter	£40.00
Fittings,clips & quick release couplings	£30.00
Total	£427.00 /$627.00 @£/$1.47

Spray Jets

Cattle shower needs to be piped in 25mm threaded galvanised steel pipe and 40 No. 90 degree cone type jets fitted It is further recommended that steel /brass type jets are fitted in the floor to avoid cattle breaking jets .

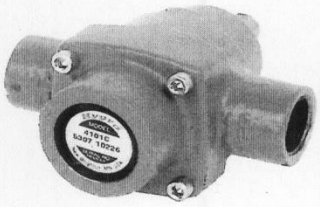
From attached data sheet jet type HC/3 32/3 are the type to be used delivering 2 lt/min x 40 jets 80lt /min.

Estimated costs for jets £400 /£588

Data Sheets For Pump

Hypro Roller Vane Pumps

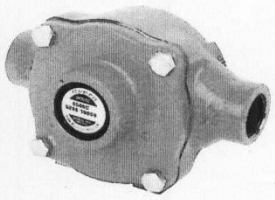
- Agricultural crop sprayers
- Horticultural spraying equipment
- Industrial spraying & cleaning
- Pressures up to 20.7 Bar
- Flow rates up to 280 Lpm
- Choice of body materials
- Land drain & sewer jetting
- Self-priming operation
- Silvercast highly resistant to herbicide



4001 & 4101 Series - 27 to 34 Lpm - 10.3 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
4001C	34.4	10.3	1800	1.1	Cast iron	Viton	5/8" M	3/4" F
4001N	34.4	10.3	1800	1.1	Ni-resist	Viton	5/8" M	3/4" F
4101C	27.3	10.3	2600	1.1	Cast iron	Viton	5/8" M	3/4" F
4101N	27.3	10.3	2600	1.1	Ni-resist	Viton	5/8" M	3/4" F
4101XL	27.3	10.3	2600	1.1	Silvercast	Viton	5/8" M	3/4" F

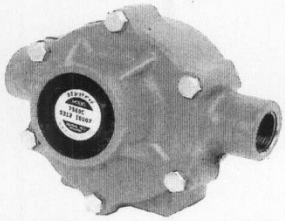
- 4-roller pump with Super Rollers
- 60°C max fluid temperature



6500 Series - 82.5 Lpm - 20.7 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
6500C	82.5	20.7	1200	4.2	Cast iron	Viton	5/8" M	3/4" F
6500N	82.5	20.7	1200	4.2	Ni-resist	Viton	5/8" M	3/4" F
6500XL	82.5	20.7	1200	4.2	Silvercast	Viton	5/8" M	3/4" F

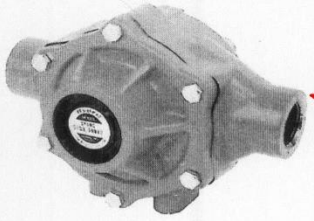
- 6-roller pump with Super Rollers
- 60°C max fluid temperature



7560 Series - 85 Lpm - 20.7 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
7560C	85	20.7	1200	6.1	Cast iron	Viton	15/16" M	3/4" F
7560N	85	20.7	1200	6.1	Ni-resist	Viton	15/16" M	3/4" F

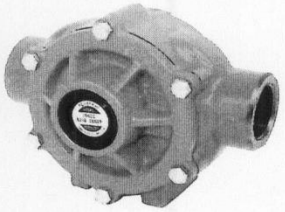
- 8-roller pump with Super Rollers
- 60°C max fluid temperature



1700 Series - 170 Lpm - 13.8 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
1700C	**170**	**13.8**	**1000**	**6.1**	**Cast Iron**	**Viton**	**15/16"M**	**1"F**
1700N	170	13.8	1000	6.1	Ni-resist	Viton	15/16" M	1" F
1700XL	170	13.8	1000	6.1	Silvercast	Viton	15/16" M	1" F

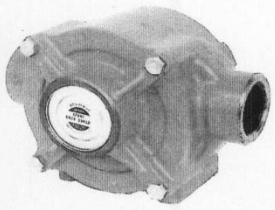
- 5-roller pump with Super Rollers
- 60°C max fluid temperature



1500 Series - 235 Lpm - 13.8 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
1502C	235	13.8	1000	7.1	Cast iron	Buna-N	15/16" M	1 1/2" F
1502N	235	13.8	1000	7.1	Ni-resist	Buna-N	15/16" M	1 1/2" F
1502XL	235	13.8	1000	7.1	Silvercast	Buna-N	15/16" M	1 1/2" F

- 6-roller pump with Super Rollers
- 60°C max fluid temperature



1200 Series - 280 Lpm - 10.3 Bar

Part No.	Max Lpm	Max Bar	Max Rpm	Max HP	Body & Rotor	Seals	Shaft	Ports
1200C	280	10.3	800	10	Cast iron	Buna-N	1" M	1 1/2" F

- 4-roller pump with Super Rollers
- 60°C max fluid temperature

- Teflon, Buna-N & Polypropylene rollers

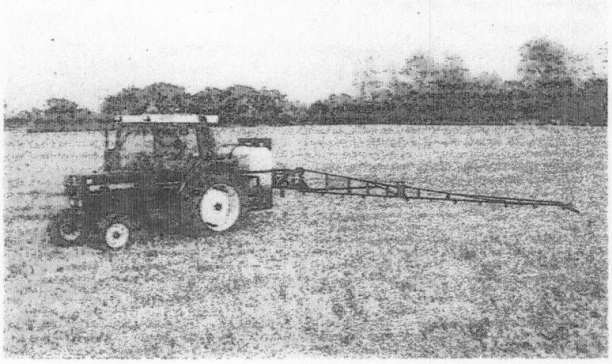
Contact

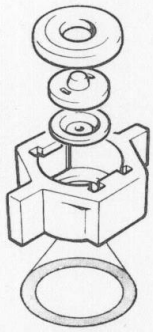
Data Sheets For Spray Nozzles

ALLMAN ALLMAN ALLMAN ALLMAN ALLMAN ALLMAN ALLMA

Allman Hollow Cone Tips: Disc and Core

Suitable for **overall spraying** of insecticides and fungicides, particularly wettable powders and other erosive particles. Swirl action keeps particles in suspension, thus reducing nozzle blockage.
The spray target should be the ear, or crop canopy, since their poor crop penetration makes hollow cone tips unsuitable for deep herbicide application or stem contact.
The disc and core combinations below have been selected for their minimum 80° included angle.





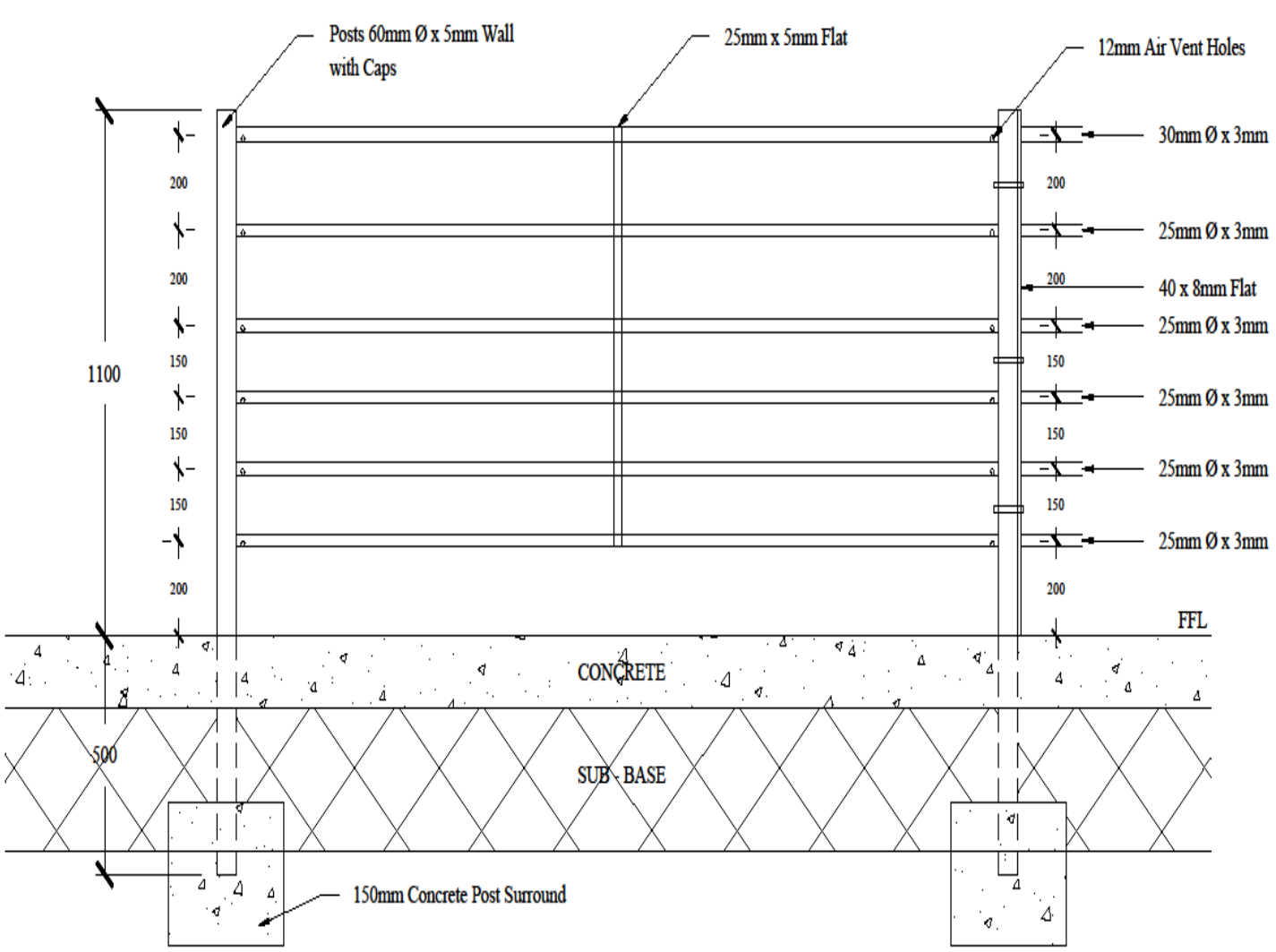
Hollow Cone Cap & Seal 058-277

REFERENCE CHART FOR OVERALL SPRAYING

Disc and Core Ref	Spray Angle at 3 bar	Imperial Press P.S.I.	Flow G.P.M.	Application rates Gallons per acre at mph 4mph	5mph	6mph	8mph	10mph	METRIC Press Bar	Flow l/min	Application rates Litres per hectare at km/h 6km/h	8km/h	10km/h	12km/h	16km/h	B.C.P.C. Nozzle Code
4 13 058-258 058-473	80°	40	0.100	7.43	**5.94**	4.95	3.71	2.97	3.0	0.47	95	**71**	57	47	36	HC/0.47/3
		45	0.106	7.88	6.30	5.25	3.94	3.15	3.5	0.51	102	77	61	51	38	
		50	0.112	8.30	6.64	5.53	4.15	3.32	4.0	0.55	109	82	66	55	41	
		60	0.122	9.09	7.27	6.06	4.55	3.64	5.0	0.61	122	92	73	61	46	
		70	0.132	9.82	7.86	6.55	4.91	3.93	6.0	0.67	134	100	80	67	50	
4 23 058-258 058-474	80°	40	0.125	9.28	**7.43**	6.19	4.64	3.71	3.0	0.59	118	**89**	71	59	44	HC/0.59/3
		45	0.133	9.84	7.88	6.56	4.92	3.94	3.5	0.64	128	96	77	64	48	
		50	0.140	10.38	8.30	6.92	5.19	4.15	4.0	0.68	137	103	82	68	51	
		60	0.153	11.37	9.09	7.58	5.68	4.55	5.0	0.76	153	115	92	76	57	
		70	0.165	12.28	9.82	8.19	6.14	4.91	6.0	0.84	167	126	100	84	63	
5 23 058-259 058-474	90°	40	0.150	11.14	**8.91**	7.43	5.57	4.46	3.0	0.71	142	**107**	85	71	53	HC/0.71/3
		45	0.159	11.81	9.45	7.88	5.91	4.73	3.5	0.77	154	115	92	77	58	
		50	0.168	12.45	9.96	8.30	6.23	4.98	4.0	0.82	164	123	98	82	62	
		60	0.184	13.64	10.91	9.09	6.82	5.46	5.0	0.92	183	138	110	92	69	
		70	0.198	14.73	11.79	9.82	7.37	5.89	6.0	1.00	201	151	121	100	75	
6 23 058-260 058-474	90°	40	0.175	12.99	**10.40**	8.66	6.50	5.20	3.0	0.83	166	**124**	99	83	62	HC/0.83/3
		45	0.186	13.78	11.03	9.19	6.89	5.51	3.5	0.90	179	134	107	90	67	
		50	0.196	14.53	11.62	9.68	7.26	5.81	4.0	0.96	191	144	115	96	72	
		60	0.214	15.91	12.73	10.61	7.96	6.37	5.0	1.07	214	161	128	107	80	
		70	0.232	17.19	13.75	11.46	8.59	6.88	6.0	1.17	234	176	141	117	88	
5 25 058-259 058-475	80°	40	0.292	21.66	**17.33**	14.44	10.83	8.66	3.0	1.38	276	**207**	166	138	104	HC/1.38/3
		45	0.309	22.97	18.38	15.31	11.49	9.19	3.5	1.49	298	224	179	149	112	
		50	0.326	24.21	19.37	16.14	12.11	9.68	4.0	1.60	319	239	191	160	120	
		60	0.357	26.52	21.22	17.68	13.26	10.61	5.0	1.78	357	268	214	178	134	
		70	0.386	28.7	22.9	19.1	14.3	11.5	6.0	1.95	391	293	234	195	147	
6 25 058-260 058-475	85°	40	0.367	27.2	**21.8**	18.2	13.6	10.9	3.0	1.74	347	**261**	208	174	130	HC/1.74/3
		45	0.389	28.9	23.1	19.3	14.4	11.6	3.5	1.88	375	281	225	188	141	
		50	0.410	30.4	24.4	20.3	15.2	12.2	4.0	2.01	401	301	241	201	150	
		60	0.449	33.3	26.7	22.2	16.7	13.3	5.0	2.24	448	336	269	224	168	
		70	0.485	36.0	28.8	24.0	18.0	14.4	6.0	2.46	491	368	295	246	184	
7 25 058-261 058-475	90°	40	0.433	32.2	**25.7**	21.5	16.1	12.9	3.0	2.05	411	**308**	246	205	154	HC/2.05/3
		45	0.460	34.1	27.3	22.8	17.1	13.7	3.5	2.22	443	333	266	222	166	
		50	0.484	36.0	28.8	24.0	18.0	14.4	4.0	2.37	474	356	284	237	178	
		60	0.531	39.4	31.5	26.3	19.7	15.8	5.0	2.65	530	398	318	265	199	
		70	0.573	42.6	34.1	28.4	21.3	17.0	6.0	2.90	581	435	348	290	218	
8 25 058-262 058-475	95°	40	0.508	37.7	**30.2**	25.2	18.9	15.1	3.0	2.41	482	**361**	289	241	181	HC/2.41/3
		45	0.539	40.0	32.0	26.7	20.0	16.0	3.5	2.60	520	390	312	260	195	
		50	0.568	42.2	33.8	28.1	21.1	16.9	4.0	2.78	556	417	334	278	209	
		60	0.623	46.2	37.0	30.8	23.1	18.5	5.0	3.11	622	466	373	311	233	
		70	0.672	49.9	39.9	33.3	25.0	20.0	6.0	3.41	681	511	409	341	255	
6 45 058-260 058-476	80°	40	0.483	36.0	**28.7**	23.9	17.9	14.4	3.0	2.29	458	**343**	275	229	172	HC/2.29/3
		45	0.513	38.1	30.5	25.4	19.0	15.2	3.5	2.47	495	371	297	247	185	
		50	0.540	40.1	32.1	26.8	20.1	16.1	4.0	2.64	529	397	317	264	198	
		60	0.592	44.0	35.2	29.3	22.0	17.6	5.0	2.96	591	443	355	296	222	
		70	0.639	47.5	38.0	31.7	23.7	19.0	6.0	3.24	648	486	389	324	243	
7 45 058-261 058-476	85°	40	0.567	42.1	**33.7**	28.1	21.0	16.8	3.0	2.68	537	**403**	322	268	201	HC/2.68/3
		45	0.601	44.6	35.7	29.8	22.3	17.9	3.5	2.90	580	435	348	290	217	
		50	0.634	47.0	37.6	31.4	23.5	18.8	4.0	3.10	620	465	372	310	232	
		60	0.694	51.5	41.2	34.4	25.8	20.6	5.0	3.47	693	520	416	347	260	
		70	0.750	55.7	44.5	37.1	27.8	22.3	6.0	3.80	759	569	456	380	285	
8 45 058-262 058-476	**90**	40	0.700	52.0	**41.6**	34.7	26.0	20.8	3.0	3.32	663	**497**	398	332	249	**HC3.32/3**
		45	0.742	55.1	44.1	36.8	27.6	22.1	3.5	3.58	716	537	430	358	269	
		50	0.783	58.1	46.5	38.7	29.1	23.2	4.0	3.83	766	574	459	383	287	
		60	0.857	63.7	50.9	42.4	31.8	25.5	5.0	4.28	856	642	514	428	321	
		70	**0.926**	**68.8**	**55.0**	**45.8**	**34.4**	**27.5**	**6.0**	**4.69**	**938**	**703**	**563**	**469**	**352**	

7. Drawings of BSPs

Typical Sheep Pen Sections



Typical Sheep Pen Sections
Elevation View 1:10

Sheep Only Sections - Can be made 5m, 10m & 15m long - depending on length of galvanising bath

Edward Hamer Ltd.
Specialist Consultant to Agriculture and Meat Industry

Job	Stock Route Study - Market in Marneuli, Georgia						
Subject	Typical Sheep Pen Sections						
Drn	MEH	Date	April '15	Scale	As Shown	Drg.No	0109 / 09
Amendments		By	Date			By	Date

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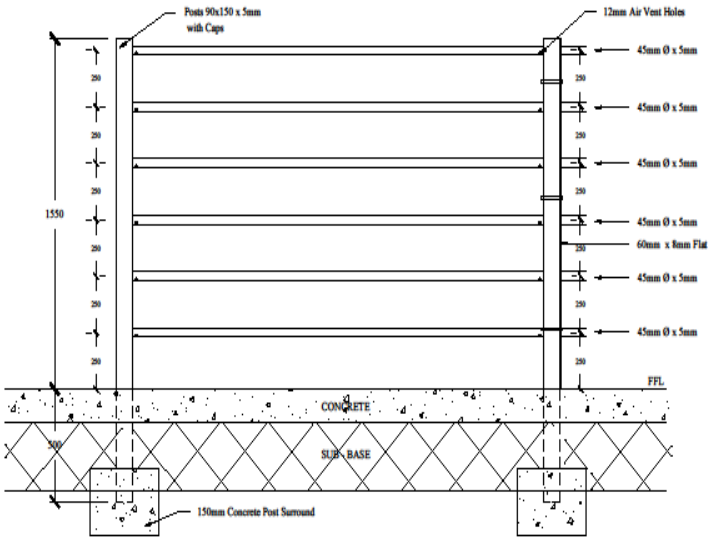
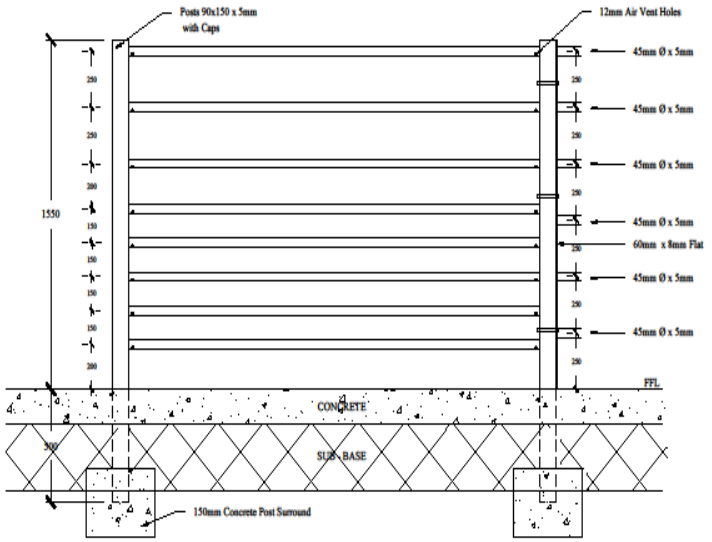
DO NOT SCALE, USE FIGURED DIMS ONLY

Typical Cattle Pen Sections



Cattle Only Sections - Can be made 5m, 10m & 15m long - depending on length of galvanising bath



Sheep & Cattle Only Sections - Can be made 5m, 10m & 15m long - depending on length of galvanising bath

Typical Sheep & Sheep + Cattle Pen Sections
Elevation View 1:20

Edward Hamer Ltd.
Specialist Consultant to Agriculture and Meat Industry

Job	Stock Route Study - Market in Marneuli, Georgia						
Subject	Typical Cattle Pen Sections						
Drn	MEH	Date	April '15	Scale	As Shown	Drg.No	0109 / 10
Amendments		By	Date			By	Date

Edward Hamer Ltd, Penybanc Farm, Glanynant, Llanildoes Powys, SY18 6PQ Tel: 07770922664 / 07734358703

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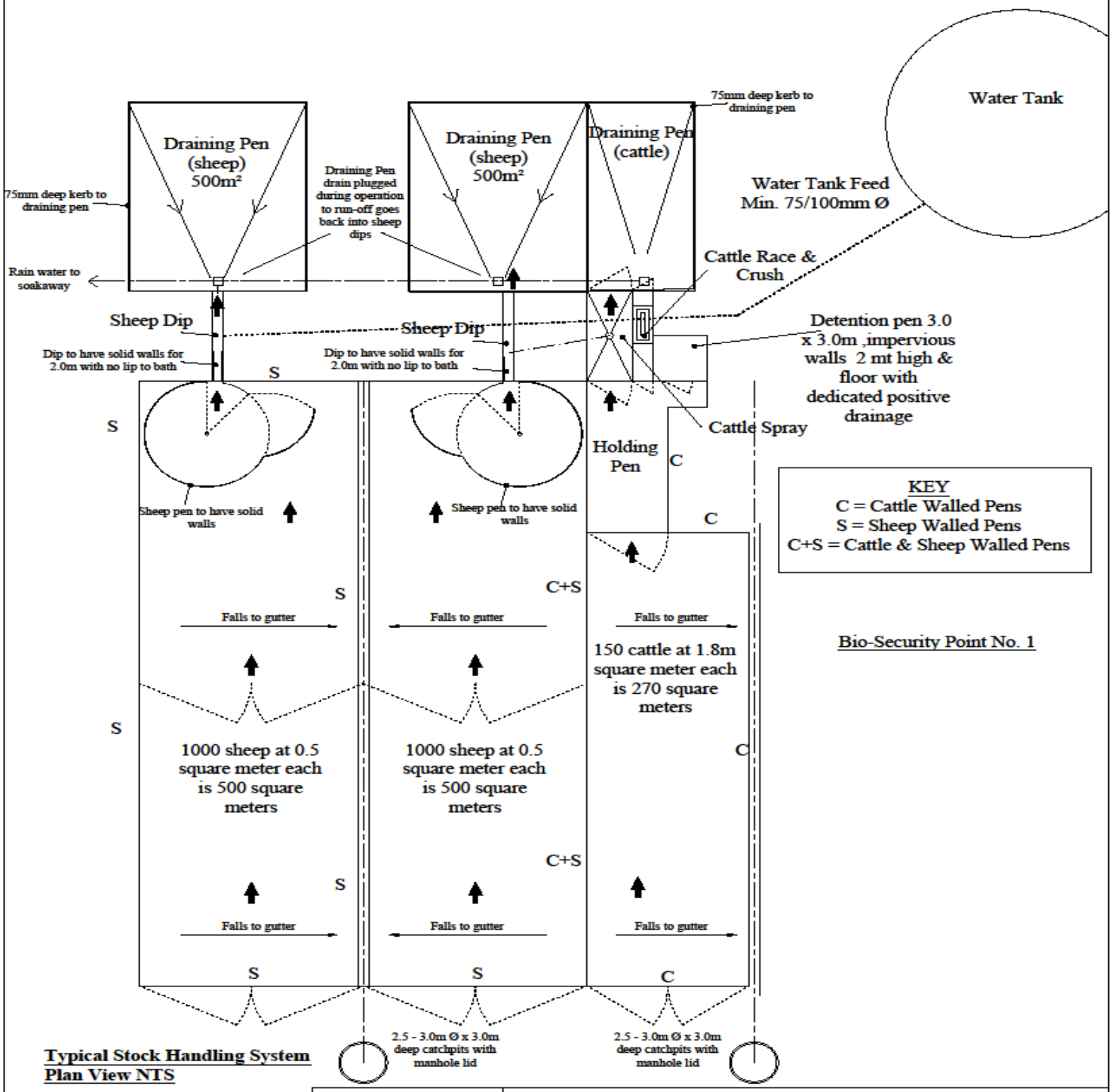
Sheep and Cattle System



Typical Stock Handling System Plan View NTS

Edward Hamer Ltd.
Specialist Consultant to Agriculture and Meat Industry

Job	Stock Route Study - Market in Marneuli, Georgia						
Subject	Typical Livestock Handling System & Bio Security Centres for Sheep & Cattle						
Drn	MEH	Date	April 15	Scale	NTS	Drg.No	0109 / 11
Amendments		By	Date			By	Date
.	.	.	.				

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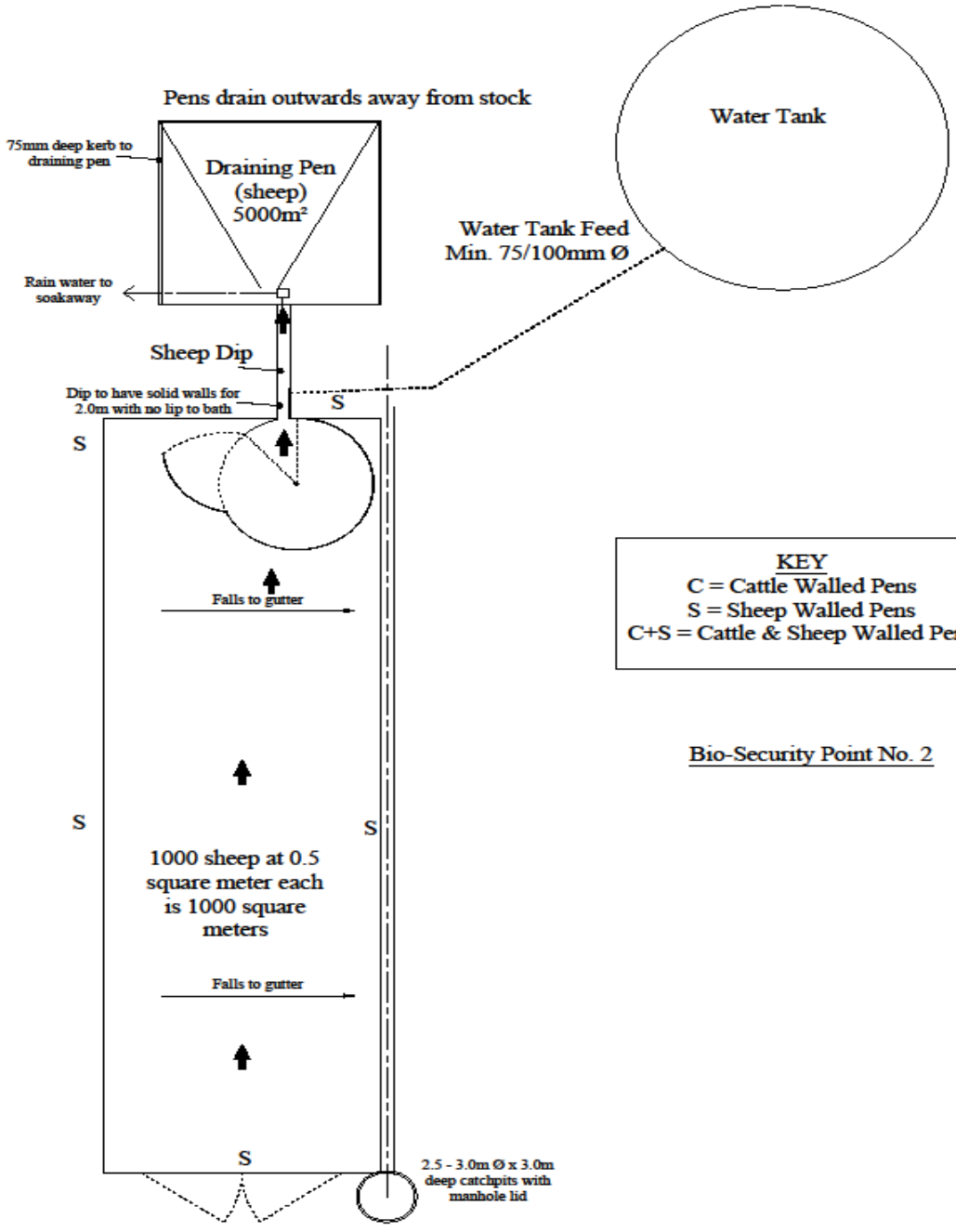
DO NOT SCALE, USE FIGURED DIMS ONLY

Sheep System

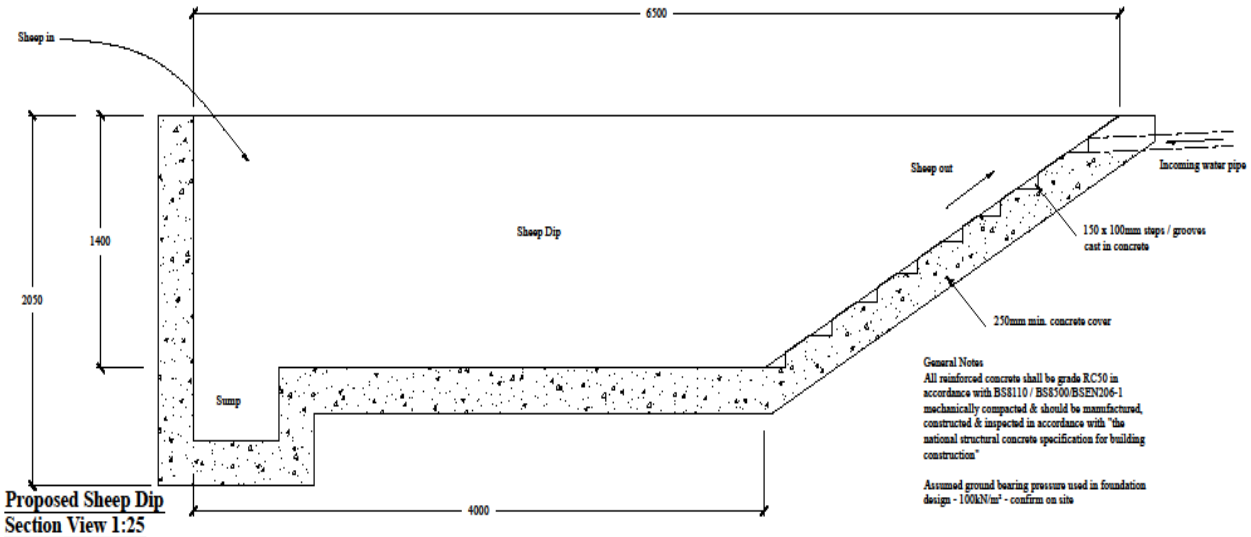


Typical Stock Handling System
Plan View NTS

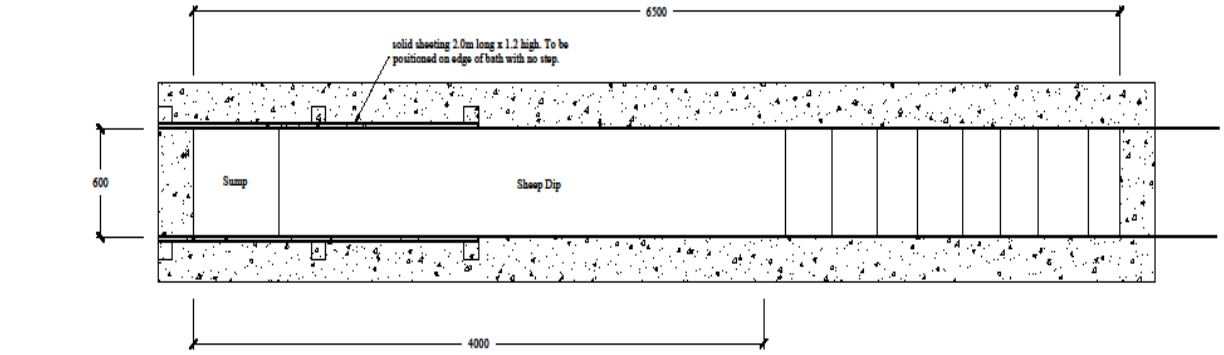
Edward Hamer Ltd. Specialist Consultant to Agriculture and Meat Industry	Job	Stock Route Study - Market in Marneuli, Georgia					
	Subject	Typical Livestock Handling System & Bio Security Centres for Sheep					
	Drn	MEH	Date	April 15	Scale	NTS	Drg.No 0109 / 12
	Amendments		By	Date		By	Date
	.	.	.	.			
	Edward Hamer Ltd, Penybanc Farm, Glanynant, Llanildoes Powys, SY18 6PQ Tel: 07770922664 / 07734358703						

DO NOT SCALE, USE FIGURED DIMS ONLY

Sheep Dip Plans and Sections



Proposed Sheep Dip Section View 1:25



Proposed Sheep Dip Plan View 1:25

Edward Hamer Ltd.
Specialist Consultant to Agriculture and Meat Industry

Job	Stock Route Study - Market in Marneuli, Georgia				
Subject	Sheep Dipping Bath				
Drn	MEH	Date	Oct 14	Scale	As Shown
Drg.No	0109 / 05A				

Amendments		By	Date			By	Date
A	Sump added + length	MH	10.04.15				

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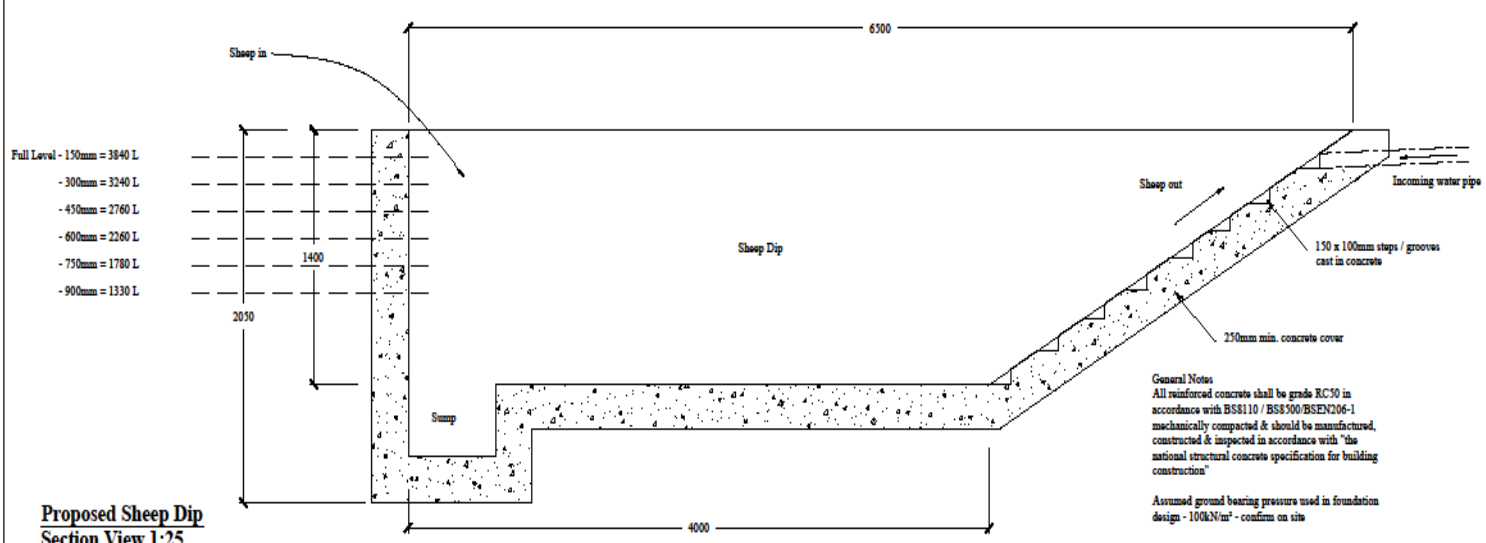
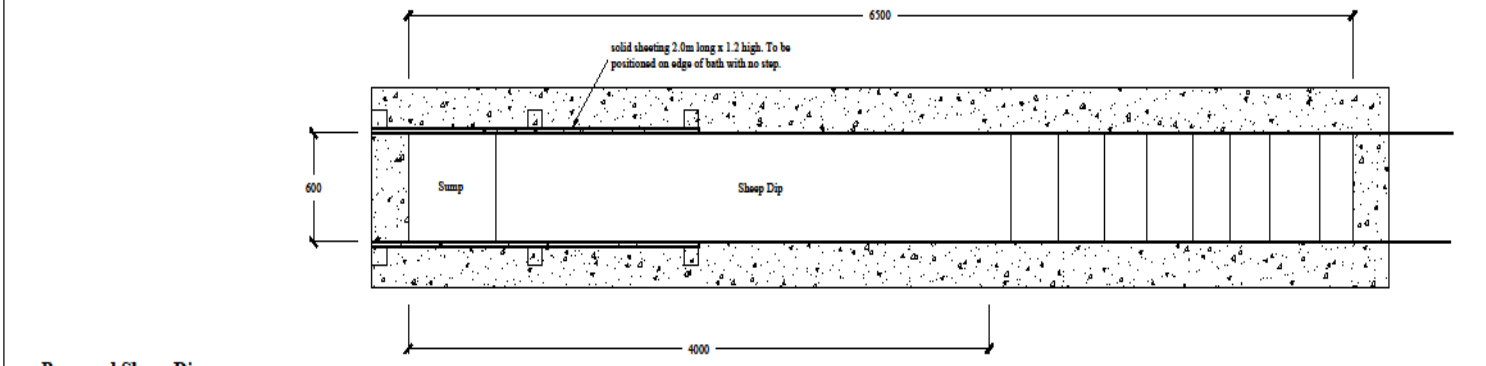
DO NOT SCALE, USE FIGURED DIMS ONLY

Sheep Dip Plans and Sections - with Water Level Indicator



Proposed Sheep Dip Section View 1:25



Proposed Sheep Dip Plan View 1:25

Edward Hamer Ltd.
Specialist Consultant to Agriculture and Meat Industry

Job	Stock Route Study - Market in Marneuli, Georgia						
Subject	Sheep Dipping Bath						
Drn	MEH	Date	Oct 14	Scale	As Shown	Drg.No	0109 / 05B

Amendments		By	Date			By	Date
A	Sump added + length	MH	10.04.15				
B	Volume dimensions	MH	22.04.15				

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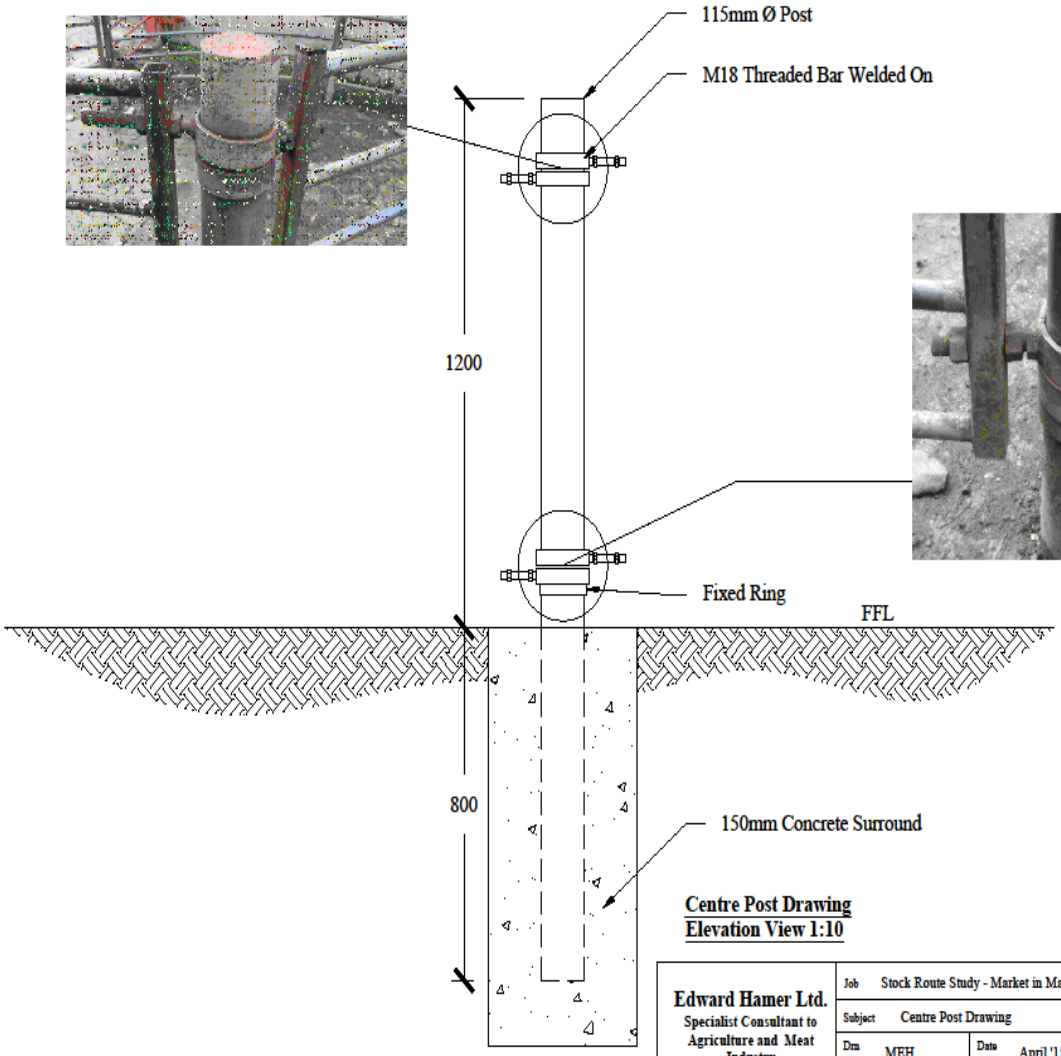
Centre Post Drawing



Centre Post Drawing
Elevation View 1:10

Edward Hamer Ltd. Specialist Consultant to Agriculture and Meat Industry	Job: Stock Route Study - Market in Marneuli, Georgia		
	Subject: Centre Post Drawing		
	Drn: MEH	Date: April '15	Scale: As Shown / Drg.No: 0109 / 08
	Amendments	By	Date
	Edward Hamer Ltd, Penybanc Farm, Glanynant, Llanildoes Powys, SY18 6PQ Tel: 07770922664 / 07734358703		

DO NOT SCALE, USE FIGURED DIMS ONLY