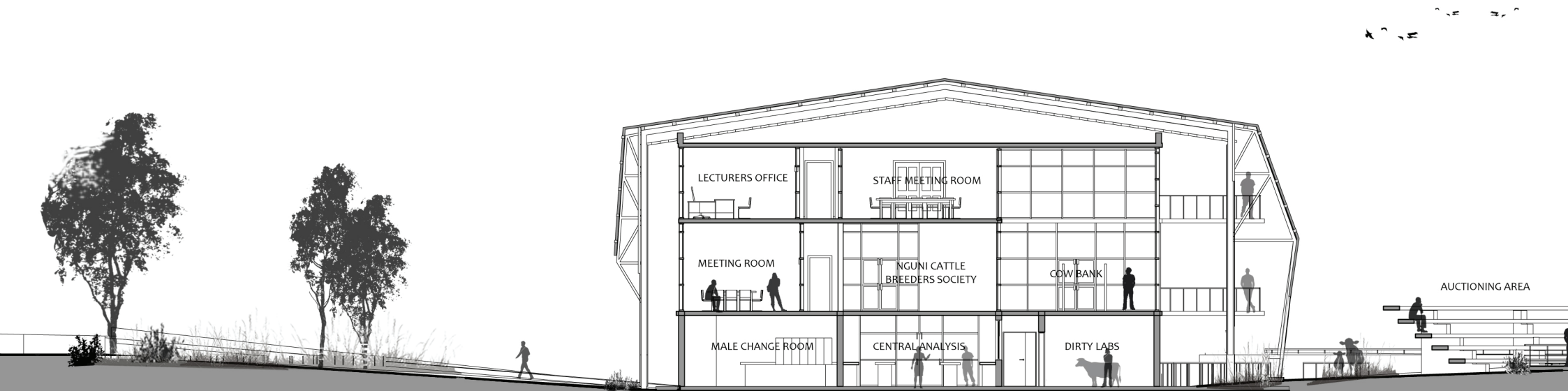
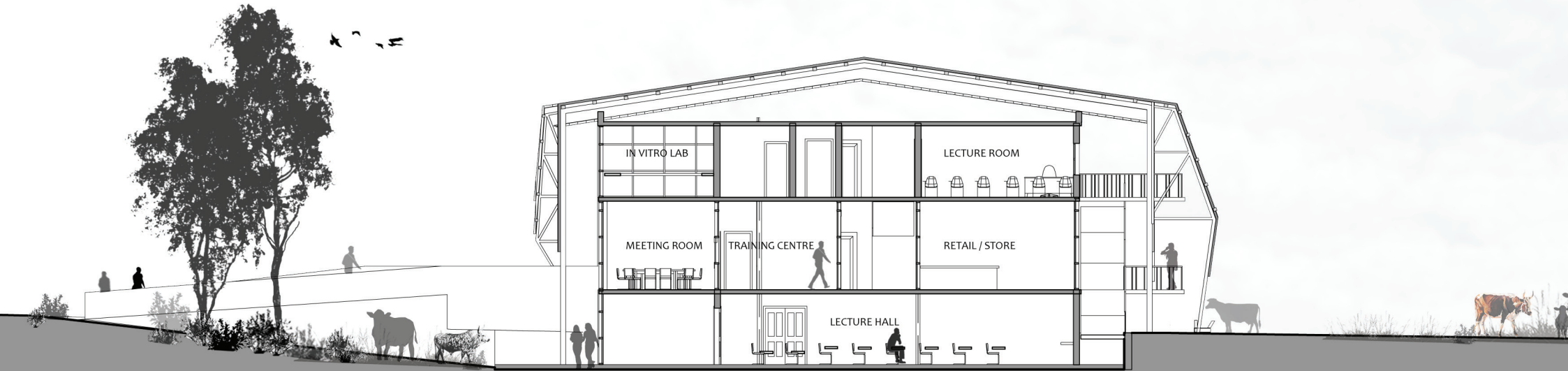
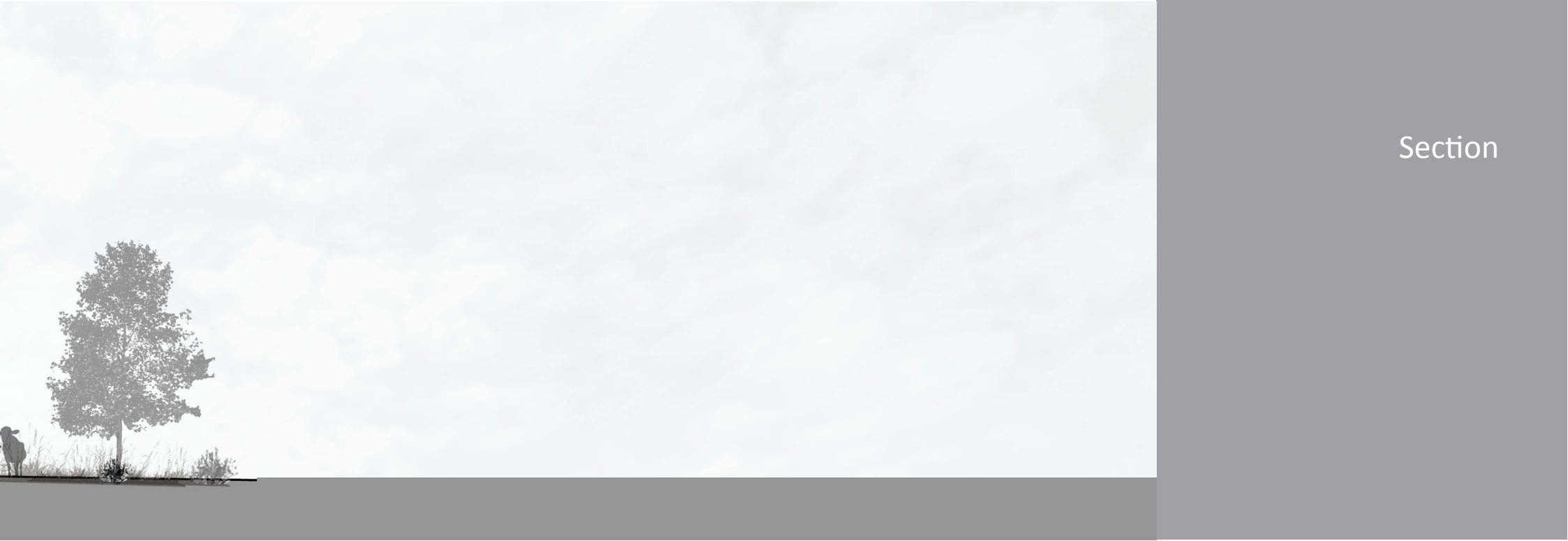
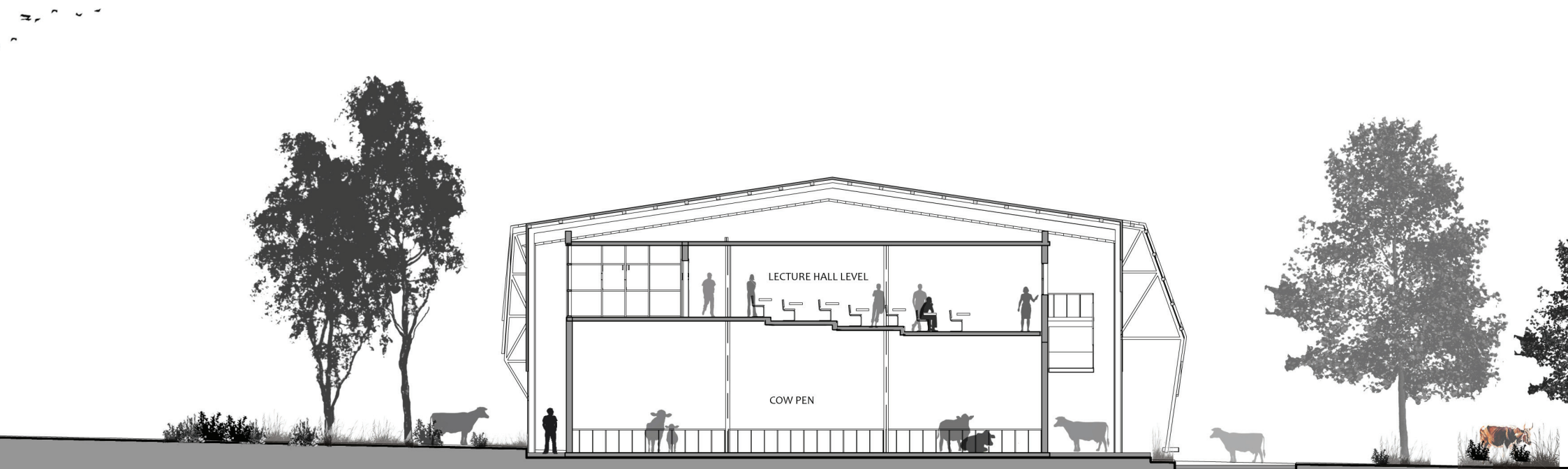
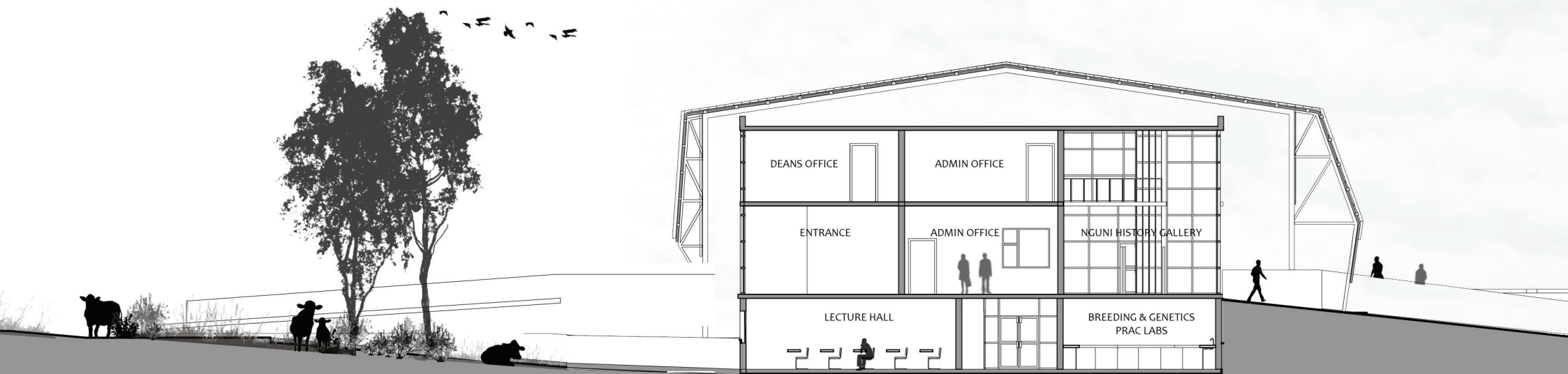




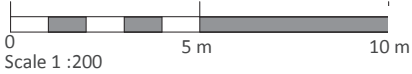


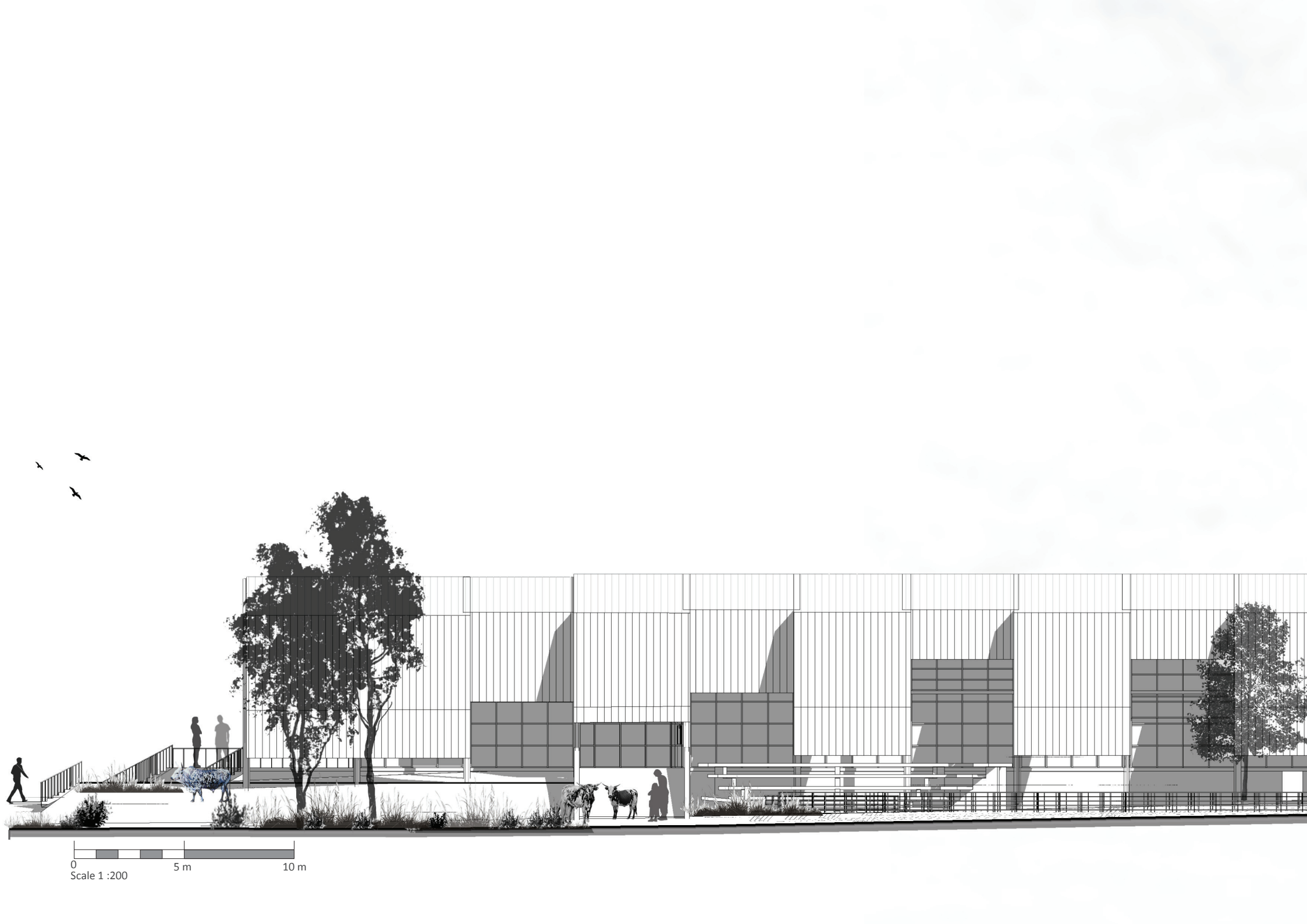
Section





Section





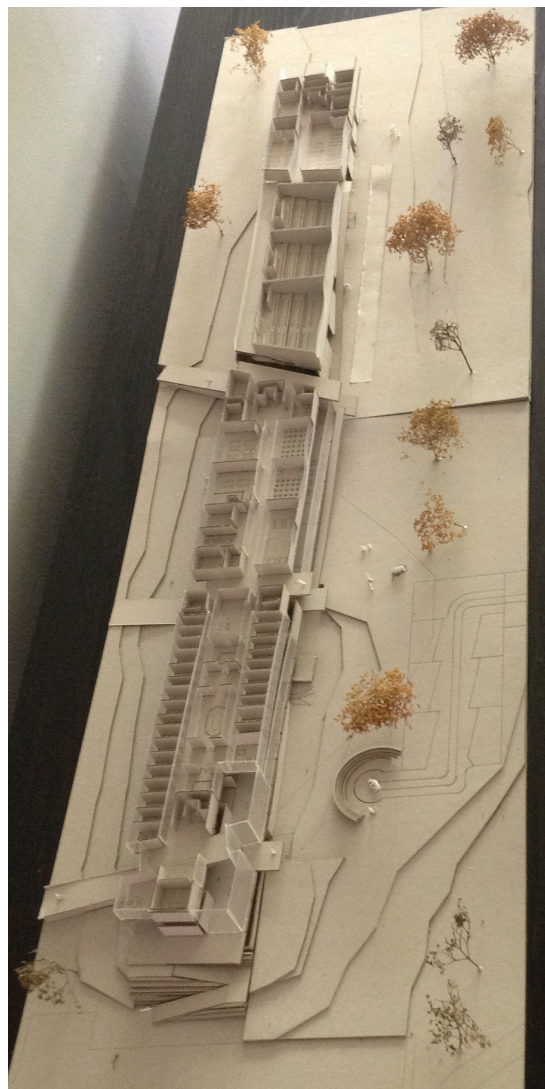
0 5 m 10 m  
Scale 1 : 200













# 4.0

## Addendum

## Technical aspects

An Abattoir is a place not regularly, if ever, visited by the general public. It is a space unknown to many other than the employers of the abattoir. It is a place separated, set aside and not understood or explored.

This analysis is an attempt to understand the process, the architectural spaces and associated requirements of the abattoir in order to find architectural clues and guidelines for design.

Abattoir regulations:

According to the Meat Safety Act of South Africa, 2000 (Act No. 40 of 2000), there are three types of abattoirs:

1. Rural red meat abattoirs:

The throughput (animals slaughtered) may not exceed two units per day.

2. Low throughput red meat abattoir:

A maximum throughput of 20 units per day, if only one species is slaughtered per day, the maximum throughput is:

- i) cattle, horses or sausage pigs  
larger than 90kg - 20 units
- ii) sheep or goats  
- 40 units
- iii) pigs  
- 30 units

3. High throughput red meat abattoir:

The maximum throughput is determined by the provincial executive officer, either on the grounds of the capacity of lairages, hourly through-

put potential relative to available equipment and facilities including hanging space, chiller capacity as well as rough offal handling and chilling capacity.

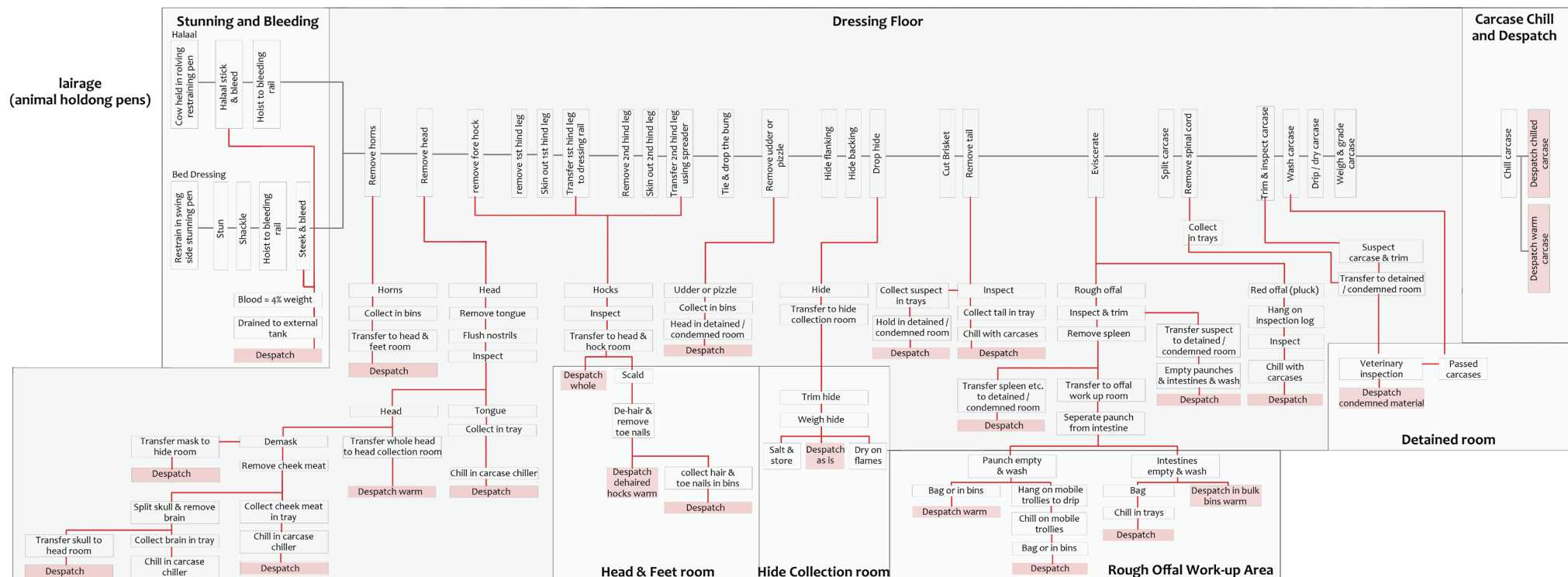
There are 285 red meat abattoirs in South Africa which slaughter about 12 million animals and use 5.8 million m<sup>3</sup> of water annually.

“unit” is a quantity standard used for determining throughput for red meat. A unit equates to:

- one cow, ox or bull, or two calves;
- one horse;
- six sheep or goats;
- four small pigs (porkers) or two bacon pigs or one sausage pig.

Below: A flow diagram of the abattoir process. Data source by Divac CC.

Cattle Slaughtering: Flow diagram of abattoir process





# 5.0

## Bibliography

## **Bibliography:**

### **Books:**

Allan, K. (2008). *Undercover Surrealism*. Gale: Cengage Learning.

Armstrong, S.J. and Botzler, R.G. (2008). *The Animal Ethics Reader*. New York: Routledge.

Association for planning and regional reconstruction. (1947). *New ideas for farm buildings*. London: Farmer and Stock Breeder.

Bataille, G. (1985). *Visions of Excess Selected Writings, 1927 - 1939*. Minneapolis: University of Minnesota Press.

Berglund, A. (1976). *Zulu Thought-Patterns and Symbolism*. London: C. Hurst & Company.

Carruthers, P. (1992). *The Animals Issue. Moral Theory in practice*. New York: Cambridge University Press.

Clark, K. (1977). *Animals and Men*. London: Thames and Hudson Ltd.

Delaney, C. (2004). *Investigating Culture*. Australia: Blackwell Publishing.

Fitzgerald, A. J. (2010). *A Social History of the Slaughterhouse: From Inception to Contemporary implications. Research in human Ecology*. Ontario: University of Windsor.

Hollier D. (1989). *Against Architecture: The writings of George Bataille*. Massachusetts Institute of Technology.

Krige, E. (1950). *The Social System of the Zulus*. Pietermaritzburg: Shuter & Shooter.

Kuper, A. (1982). *Wives for cattle*. London: Routledge & Kegan Paul Ltd.

Poland, M; Hammond-Tooke, D & Voigt, L. (2003) *The Abundant Herd*. South Africa: Fernwood Press.

Regan, T. & Singer, P. (1976). *Animal Rights and Human Obligations*. New Jersey: Prentice-Hall, inc.

Russell, J. (1971). *Francis Bacon*. London: Thames and Hudson.

Safran Foer, J. (2009). *Eating Animals*. New York: Little, Brown and Company.

Vialles, N. (1994). *Animal to edible*. New York: Cambridge University Press.

Wheeler, M. (1950). *Soutine*. New York: Simon and Schuster.

Armstrong, S.J. and Botzler, R.G. (2008). *The Animal Ethics Reader*. New York: Routledge.

Skinner, J. (1997). *Form and Fancy: Factories and Factory Buildings by Wallis, Gilbert & Partners, 1916-1939*. Liverpool: Liverpool University Press.

Mander, C. & Maurice, B. (1986). *Farm Building Construction*. Great Britain: Farming Press Limited.

### **Articles:**

Burt, J. (2008). *The Aesthetics of Livingness*. (Electronic version). *Antenna* 5: 4-110.

Baker, S. (16 February 2012). *Exquisite Corpses and Anagrammatic Bodies: Deviations of Nature in DOCUMENTS and elsewhere*. Available from: <http://prosperos.unibg.it>

(Accessed 04 April 2012).

Haraway, D. (1989). Meat's Patriarchy. Available from: [press.princeton.edu/books/stanford/chapter\\_7.pdf](http://press.princeton.edu/books/stanford/chapter_7.pdf) (Accessed 27 March 2012).

Kotze, P. (2005). Comrie + Wilkinson, Chapel of Light. *UME*. Volume 19: 34-39.

Smith, M. (2002). The 'Ethical' Space of the Abattoir: On the (In)human(e) Slaughter of Other Animals. *Human Ecology Review*, Volume 9, no. 2.

Waldron, K. (2010). Slaughtering and Eating Beautiful Creatures: Kim Waldron's Folk Feast. *Contemporary Art Magazine and Project Space*. Available from: <http://freepassproject.com/?p=108> (Accessed 24 March 2012).

Weller, J. (1968). *Metric Handbook, Planning and Design Data*. Oxford: Architectural Press.

Van der Merwe, C. (n.d). Nguni Cattle A Breed of National Importance. ZZZ Nguni Stud p21-22 Available from: [www.ngunicattle.co.za/](http://www.ngunicattle.co.za/) (Accessed 27 June 2012)

Hofmeyr, I. (August 2012). Financing should make economic sense. *Stockfarm*, page 7.

#### **Journal:**

Scholtz, M. The contribution of research, performance recording and breed societies to the conservation of genetic resources.

Exmoor pharma concepts. (2008). The In Vitro Meat Consortium Preliminary Economics Study Project 29071. Online. Interview:

#### **Interview:**

Sihlongo, M. Lecturer at Wits, Faculty of Built Environment. Interview by author. [Transcript]. 3rd September 2012.

#### **Internet:**

Sooke, A. (2011). Damien Hirst: 'We're here for a good time, not a long time' (<http://www.telegraph.co.uk/culture/art-features/8245906/Damien-Hirst-Were-here-for-a-good-time-not-a-long-time.html>) (Accessed 6 April 2012).

Howard, B.C. (2009). Is It Wrong to Kill Animals for Art? Available from: <http://www.thedailygreen.com/living-green/blogs/recycling-design-technology/art-animal-cruelty-460109#ixzz1rtmX6p85> (Accessed 6 April 2012).

Reinhardt, V & Reinhardt, A. (n.d). Comfortable Quarters for Cattle in Research Institutions. Available from: <http://labanimals.awionline.org/pubs/cq02/Cq-cow.html> (Accessed 15 October 2012)

Stone, J.J. (2011). Lady Gaga Launches Fashion Line Made from Discarded Meat. Available from: <http://www.treehugger.com/style/lady-gaga-launches-fashion-line-made-from-discarded-meat.html> (Accessed 6 April 2012).

The Guardian. (n.d). Datablog. Available from: <http://www.guardian.co.uk/environment/datablog/2009/sep/02/meat-consumption-per-capita-climate-change>. (Accessed 18 March 2012).

eNotes. (2012). In Vitro Meat. Accessed from: [http://www.enotes.com/topic/In\\_vitro\\_meat](http://www.enotes.com/topic/In_vitro_meat) (Accessed on: 09/ May 2012)

RMIF. (2010). RedMeat Industry Forum. Accessed from:

<http://www.redmeatsa.co.za/member-organisations/rpo>  
(Accessed on: 10 May 2012)

Gayle, D. (2012). Artificial meat grown in a lab could become a reality THIS year. Accessed from <http://www.dailymail.co.uk/sciencetech/article-2087837/Test-tube-meat-reality-year-scientists-work-make-profitable.html>  
(Accessed on: 09 May 2012)

Entabeni Communications cc, undated. A forum for the appreciation of the Nguni cattle of Southern Africa. Available from: <http://zulucattle.com>. (Accessed 10 June 2012)

The Nguni Cattle Breeders' Society of South Africa. (2008-2012). Nguni Cattle Breeders' Society / Beestelersgenootskap. Available from: <http://ngunicattle.info/> (Accessed 18 October 2012)

SASAS (South African Society for Animal Science). (2009). Nguni Cattle Breeders' Society. Available from: <http://sasas.co.za/node/2349> (Accessed 18 October 2012)

O'Dell, J. (2010). RFID Tagged Cows start Tweeting. Available from: <http://mashable.com/2010/04/27/cows-on-twitter/> (Accessed 12 October 2012)

Lauren. (2010). Ontarion dairy cows Tweet about their teats. Available from: [www.blogto.com/tech/2010/03/ontario\\_dairy\\_cows\\_tweet\\_about\\_their\\_teats/](http://www.blogto.com/tech/2010/03/ontario_dairy_cows_tweet_about_their_teats/) (Accessed 18 October 2012)

Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources. (2007). Some ways to indentify Beef Cattle. Available from: [www.thecattlesite.com/articles/1005/some-ways-to-indentify-beef-cattle](http://www.thecattlesite.com/articles/1005/some-ways-to-indentify-beef-cattle) (Accessed 19 October 2012)

Neary, M and Yager, A. (n.d). Farm Animal, Management @ Purdue: Methodes of Livestock Identification. Available from: [www.extension.purdue.edu/extmedia/AS/AS-](http://www.extension.purdue.edu/extmedia/AS/AS-556-W.pdf)

556-W.pdf

Das, S. (2012). Holy Cows: Hinduism's Blesses Bovines. Available from: <http://hinduism.about.com/od/vegetarianism/a/holycows.htm> (Accessed 22 October 2012)

Symbols. (2012). Cow. Available from: <http://symbols.ehibou.com/cow/> (Accessed 22 October 2012)

Bustler. (15 October 2009). A-cero wins Reseach Centre for Renewable Energy Sources in Murcia, Spain. Available from: [www.bustler.net/index.php/article/a-cer\\_wins\\_research\\_centre\\_for\\_renewable\\_energy\\_sources/](http://www.bustler.net/index.php/article/a-cer_wins_research_centre_for_renewable_energy_sources/) (Accessed 29 September 2012)

FAO. (1986). Farm strucures in tropical climates. Available from: <http://www.fao.org/docrep/S1250E/S1250E00.htm> (Accessed 11 September 2012)

Vallas, P. (25 April). 'The Hidden Death' by Tommaso Ausili Reveals Some Horrors. Available from: [www.trendhunter.com/trends/tommaso-ausili](http://www.trendhunter.com/trends/tommaso-ausili) (Accessed 6 March 2012)

## List of images:

All images by author unless otherwise stated.

Figure 1: Yoshida, W. 2011. Composition of Mammals.[illustration] Available at: <http://www.designboom.com/weblog/cat/10/view/13417/wataru-yoshida-composition-of-mammals.html> [Accessed 02 May 2012].

Figure 2: Montose, S. 2009. Cow No. 2. [photograph] Available at: <http://www.theanimalprintshop.com/cow-no.-2/> [Accessed 24 July 2012].

Figure 3: [Nguni Cattle Breed] n.d. [image online] Available at: <http://informedfarmers.com/nguni-cattle-breed/> [Accessed 22 September 2012].

Figure 4: Kobus, T. n.d. Woman Carry Wood. [online image of oil painting] Available at: <http://www.spinman.co.za/p/nguni-cattle.html> [Accessed 6 October 2012].

Figure 5: Philip, B. 2010. Nguni Study 1. [online image of oil painting] Available at: <http://silvermere.africanpainting.com/nguni-study-revisited/> [Accessed 12 July 2012].

Figure 6: [Des Morgan cattle cc] n.d. [image online] Available at: [http://www.bushcooks.com/des\\_morgan\\_cattle.html](http://www.bushcooks.com/des_morgan_cattle.html) [Accessed 6 September 2012].

Figure 7: ILRI/ Trinity College Dublin. N.d. Origin and migration routes of domestic cattle in Africa. [image online] Available at <http://frontiers-of-anthropology.blogspot.com/2011/03/cattle-out-of-africa-too.html> [Accessed 21 October 2012].

Figure 8: Oosthuizen, E. 2012. Nguni Cattle of the Caprivi. [photograph] Available at: <http://blog.africageographic.com/safari-blog/conservation/nguni-cattle-of-the-caprivi-project-rhino-kzn-on-the-put-foot-rally/> [Accessed 14 Sep-

tember 2012].

Figure 9: [Nguni Pictures- 3 cows] n.d. [image online] Available at: [http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category\\_id=36&option=com\\_virtuemart&Itemid=1](http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category_id=36&option=com_virtuemart&Itemid=1) [Accessed 12 May 2012].

Figure 10: Eljaypea. 2006. Nguni Catlle, South Africa. [image online] Available at: <http://eljaypea.deviantart.com/art/nguni-cattle-south-africa-30397675> [Accessed 19 August 2012].

Figure 11: Discofrisco. 2011-2012. Nguni 4. [Painting online] Available at <http://kaitlinchoi.deviantart.com/favourites/#/d4arom9> [Accessed 19 August 2012].

Figure 12: Bacon, F. 1954. Figure with Meat. [online image of oil painting] Available at: [http://www.everypainterpaintshimself.com/galleries/bacon\\_francis/](http://www.everypainterpaintshimself.com/galleries/bacon_francis/) [Accessed 12 April 2012].

Figure 13: Soutine, C. 1924. Carcass of Beef. [Image online] Available at: <http://pictify.com/1043/chaim-soutine-carcass-of-beef> [Accessed on 12 April 2012].

Figure 14: Hirst, D. 2005. In the Name of the Father. [Image online] Available at: <http://www.stuckism.com/Hirst/StoleArt.html> [Accessed 12 April 2012].

Figure 15: Hirst, D. 2008. The Golden Calf. [Image online] Available at: <http://online.wsj.com/article/SB121933383884460573.html#slide/5> [Accessed 12 April 2012].

Figure 16: Hirst, D. 1993. Mother and Child Divided. [Image

online] Available at: <http://mraybould.wordpress.com/tag/damien-hirst/> [Accessed 12 April 2012].

Figure 17: Hirst, D. 1993. Mother and Child Divided. [Image online] Available at: [http://artbazaar.blogspot.com/2008\\_04\\_01\\_archive.html](http://artbazaar.blogspot.com/2008_04_01_archive.html) [Accessed 12 April 2012].

Figure 18: Lotar, E. 1929. Aux abattoirs de la Villette. [photograph] Available at: <http://skunkfunker.tumblr.com/post/3242292447> [Accessed 28 March 2012].

Figure 19: Lotar, E. 1929. Aux abattoirs de la Villette. [photograph] Available at: <http://www.tumblr.com/tagged/eli-lotar> [Accessed 28 March 2012].

Figure 20: Lotar, E. 1929. Aux abattoirs de la Villette, No. 6. [photograph] Available at: <http://onesurrealistaday.com/post/1529771691/abattoir> [Accessed 28 March 2012].

Figure 21 : Lotar, E. 1929. Aux abattoirs de la Villette. [photograph] Available at: <http://foxesinbreeches.tumblr.com/post/26637480709/aux-abattoirs-de-la-villette-by-eli-lotar-1929> [Accessed 28 March 2012].

Figure 22: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/826/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 23: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/842/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 24: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/824/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 25: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/828/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 26: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/841/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 27: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/839/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 28: Ausili, T. 2010. The Hidden Death. [photograph] Available at: <http://www.worldphoto.org/images/image/825/?FromImageGalleryID=72> [Accessed 28 March 2012].

Figure 29: [Meat dress] 2010. [image online] Available at: <http://strollerkill.wordpress.com/2009/06/12/if-you-dont-own-anything-to-match-your-bacon-shoes/#more-56> [Accessed 4 April 2012].

Figure 30: [Quirky Sneaket style shoes] n.d. [image online] Available at: <http://fashionclassforall.wordpress.com/category/fashion-and-style/page/9/> [Accessed 4 April 2012].

Figure 31: [Meat pants] 2009. [image online] Available at: <http://www.artschoolvets.com/news/2009/04/07/meat-pants-nichts-fur-vegetarier/> [Accessed 4 April 2012].

Figure 32: Jaschke, P. 2009. Stephanie Hensle: Meat neck-lace. [photograph] Available at: <http://www.dwell.com/articles/meat-stephanie-hensle.html> [Accessed 4 April 2012].

Figure 33: [“The Meat Lace”] n.d. [image online] Available at: <http://onchmovement.bigcartel.com/product/the-meat-lace> [Accessed 4 April 2012].

Figure 34: [“The Meat Lace”] n.d. [image online] Available at: <http://onchmovement.bigcartel.com/product/the-meat-lace> [Accessed 4 April 2012].

Figure 35: Peta, 2008. An Open Letter to Leather-Loving Lotharios. [image online] Available at: <http://www.peta.org/b/thepetafiles/archive/tags/Instinct/default.aspx> [Accessed 4 April 2012].

Figure 36: Toscani, O. 1989. White Black Yellow. [photograph] Available at: <http://abelgalois.blogspot.com/2007/03/white-black-yellow-oliviero-toscani.html> [Accessed 4 April 2012].

Figure 37: Peta India, n.d. Peta: Gulshan Grover. [image online] Available at: <http://adloo.blogspot.com/2011/01/animals-invalid-peta-tells-you-why-they.html> [Accessed 4 April 2012].

Figure 38: Wallis, A.D. n.d. Four beef cattle resting their chins on a wall. [photograph] Available at: <http://www.gettyimages.com/detail/photo/four-beef-cattle-resting-their-chins-on-a-wall-royalty-free-image/129747911> [Accessed 22 September 2012].

Figure 39: Nenmann, M. n.d. Mother Cow. [Image online] Available at: [http://www.marleneneumann.com/Landscapes-3.html#\\_blank](http://www.marleneneumann.com/Landscapes-3.html#_blank) [Accessed 12 July 2012].

Figure 40: Naturalpatriot.org. n.d. [photograph] Available at: <http://naturalpatriot.org/2007/09/10/biodiversity-and-food-security-heading-for-a-livestock-meltdown/> [Accessed 6 September 2012].

Figure 41: Cartwright, R. 2012. Black & White: Friday 25 May. [photograph] Available at: <http://robcartwrightphoto>

[tography.wordpress.com/2012/07/02/black-white-friday-25-may-365-360-day-306/](http://tography.wordpress.com/2012/07/02/black-white-friday-25-may-365-360-day-306/) [Accessed 18 August 2012].

Figure 42: [Depiction of Ancient Egyptian Goddess Hathor]. n.d. Available at [www.kenseamedia.com/egyptian\\_gods/hathor\\_delb.htm](http://www.kenseamedia.com/egyptian_gods/hathor_delb.htm) [Accessed 16 October 2012].

Figure 43: [The Surabhi Cow]. n.d. [image online]. “Hinduism and the Surabhi Cow. Available at [www.cwrl.utexas.edu/~bump/603B08/briefschedule.html](http://www.cwrl.utexas.edu/~bump/603B08/briefschedule.html) [Accessed 16 October 2012].

Figure 44: Health and Consumers Directorate-General. N.d. Image 1: The Life of Dairy Cows. [image online] Available at: [http://www.farmland-thegame.eu/tech\\_sheet\\_06\\_dairy\\_cows\\_en.html](http://www.farmland-thegame.eu/tech_sheet_06_dairy_cows_en.html) [Accessed 17 September 2012].

Figure 45: Chartsbin, 2009. Annual Meat Consumption per capita. [image online] Available from <http://chartsbin.com/view/bhy> [Accessed 20 May 2012]

Figure 46: [Invitro meat in glass jars] 2010 [image online] Available at: <http://www.acompassionateworld.org/tag/cultured-meat/> [Accessed 28 April 2012].

Figure 47: Greenall, T. 2009. Petri-Dish: 1:1 Rapid Prototype with Resin. [image online] Available at: <http://www.tom-greenall.co.uk/project.php?sel=21> [Accessed 28 April 2012].

Figure 48: Macmillan Publishers Ltd. 2010. Nature. [image online] Available at: [https://sitn.hms.harvard.edu/sitnflash\\_wp/2011/03/issue90/](https://sitn.hms.harvard.edu/sitnflash_wp/2011/03/issue90/) [Accessed 28 April 2012].

Figure 49: Ernst, S. n.d. White Nguni Cow. [photograph] Available at: <http://stefernst.com/galleries/photography/animals/> [Accessed 17 August 2012].

Figure 50: O'Dell. 2010. RFID Tagged Cows Start Tweeting. [Online image] Available at <http://mashable.com/2010/04/27/cows-on-twitter/> [Accessed 21 October 2012]

Figure 51: Figure 50: O'Dell. 2010. RFID Tagged Cows Start Tweeting. [Online image] Available at <http://mashable.com/2010/04/27/cows-on-twitter/> [Accessed 21 October 2012]

Figure 52: Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, 2007, *Noseprints from the same cow*, image, available from [www.thecattlesite.com/articles/1005/some-ways-identify-beef-cattle](http://www.thecattlesite.com/articles/1005/some-ways-identify-beef-cattle). [viewed 19 October 2012]

Figure 53: Health and Consumers Directorate-General. N.d. Image 1: The Life of Dairy Cows. [image online] Available at: [http://www.farmland-thegame.eu/tech\\_sheet\\_06\\_dairy\\_cows\\_en.html](http://www.farmland-thegame.eu/tech_sheet_06_dairy_cows_en.html) [Accessed 17 September 2012].

Figure 54: [Nguni in field] n.d. [image online] Available at: [http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category\\_id=36&option=com\\_virtuemart&Itemid=1](http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category_id=36&option=com_virtuemart&Itemid=1) [Accessed 12 May 2012].

Figure 55: Ferran, J. N.d. The song (revisited). [photograph] Available at: <http://www.flickr.com/photos/ferran-jorda/4691775700/> [Accessed 22 September 2012].

Figure 56: [Wide angle cameras: Cows] n.d. [photograph] Available at: <http://www.webdesignburn.com/2012/02/13/35-stunning-examples-of-wide-angle-photography/> [Accessed 17 August 2012].

Figure 57: [Plan of Klipriviersberg settlement, Johan-

nesburg] n.d. [image online] Available at: <http://www.sahistory.org.za/topic/prehistory-pre-colonial-farmers-gauteng?page=3> [Accessed 16 May 2012].

Figure 58: [Plan of Molokwane homestead, Gauteng] n.d. [image online] Available at: <http://www.sahistory.org.za/topic/prehistory-pre-colonial-farmers-gauteng?page=2> [Accessed 16 May 2012].

Figure 59: [Section of A-Cero's Research Centre for Renewable Energy Sources in Murcia, Spain] n.d. [image online] Available at: <http://stephenbrammer.wordpress.com/2009/10/16/ed-roundup-16th-october-2009/> [Accessed 7 September 2012].

Figure 60: [Aerial Perspective of A-Cero's Research Centre for Renewable Energy Sources in Murcia, Spain] n.d. [image online] Available at: <http://stephenbrammer.wordpress.com/2009/10/16/ed-roundup-16th-october-2009/> [Accessed 7 September 2012].

Figure 61: Hofmann, H. 1975. Figure 7: "Swing" up into a standing position. [drawing] Available at: <http://labanimals.awionline.org/pubs/cq02/Cq-cow.html> [Accessed 17 October 2012].

Figure 62: FAO. 1986. Farm structures in tropical climates. Tie Stall. [drawing] Available from: <http://www.fao.org/docrep/S1250E/S1250E00.htm> (Accessed 11 September 2012)

Figure 63: FAO. 1986. Farm structures in tropical climates. Dipping tank. [drawing] Available from: <http://www.fao.org/docrep/S1250E/S1250E00.htm> (Accessed 11 September 2012)

Figure 64: FAO. 1986. Farm structures in tropical climates.

Dipping tank. [drawing] Available from: <http://www.fao.org/docrep/S1250E/S1250E00.htm> (Accessed 11 September 2012)

Figure 65: [High Efficiency 180 Degree Round Crowd Pen] 2011. [image online] Available at: <http://www.grandin.com/design/curved.handling.facilities.html> [Accessed 23 August 2012].

Figure 66: [Bad Design- Chute is Bent Too Sharply] 2011. [image online] Available at: <http://www.grandin.com/design/curved.handling.facilities.html> [Accessed 23 August 2012].

Figure 67: [The cow and Bull, Plate 3 anatomy sketch] 1950. [drawing] Available at: <http://www.hubzi.com/Request/PalDetails/arts-crafts/vintage-cow-and-bull-side-skeletal-view-illustration-book-page?lid=68473345&pid=5&sid=30&cid=2002> [Accessed 29 April 2012].

Figure 68: [The cow and Bull, Plate 4 anatomy sketch] 1950. [drawing] Available at: <http://www.hubzi.com/Request/PalDetails/arts-crafts/vintage-cow-and-bull-side-skeletal-view-illustration-book-page?lid=68473345&pid=5&sid=30&cid=2002> [Accessed 29 April 2012].

Figure 69: [Portrait of Herd] n.d. [image online] Available at: [http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category\\_id=36&option=com\\_virtuemart&Itemid=1](http://www.africanhidesandleather.com/web/index.php?page=shop.browse&category_id=36&option=com_virtuemart&Itemid=1) [Accessed 12 May 2012].

Figure 70: [Image of herd with one cow's head facing viewer] n.d. [image online] Available at: [http://www.ehow.com/how\\_8461441\\_create-cattle-brands.html](http://www.ehow.com/how_8461441_create-cattle-brands.html) [Accessed 6 September 2012].

Figure 71: Ellmist. 2002. Cattle Herd. [photograph] Available at: [http://en.wikipedia.org/wiki/File:Cattle\\_herd.jpg](http://en.wikipedia.org/wiki/File:Cattle_herd.jpg) [Accessed 6 September 2012].

Figure 72: GHG, n.d. The Carbon Footprint of Food. [Graphic] Available at [www.thedailygreen.com/weird-weather/weather-categories/global-warming-pictures/carbon-footprint-of-food-0717](http://www.thedailygreen.com/weird-weather/weather-categories/global-warming-pictures/carbon-footprint-of-food-0717) [Accessed 14 May 2012].

Figure 73: Thomond, C. 2010. Cattle awaiting slaughter at Penny and Sons in Leeds. [photograph] Available at: <http://www.guardian.co.uk/lifeandstyle/gallery/2010/jul/08/slaughter> [Accessed 13 September 2012].

Figure 74: Amber Sky Creations. 2011. Botswana: image 1. [photograph] Available at: <http://www.amberskycreations.co.za/wordpress/> [Accessed 17 August 2012].

It was a stifling hot day as I stopped next to the road in rural KwaZulu-Natal to admire some Nguni cattle grazing next to the road. As my eyes feasted on the beautiful shapes and colours, I noticed a wizened old man leaning on a stick, also gazing at the cattle. It was a timeless moment when I asked him where these cattle come from. With a far-off look in his eyes he nodded and slowly said: “These cattle have always been here.”

Chris Van Der Merwe

Figure 74: Photograph (Amber Sky Creations). 2011)

