the dedet

Department:
Economic Development, Environment and Tourism
MPUMALANGA PROVINCIAL GOVERNMENT

Basic assessment report in terms of the Environmental Impact Assessment Regulations, 2010, promulgated in terms of the National Environmental Management Act, 1998(Act No. 107 of 1998), as amended.

(For applicant / EAP to complete)

File Reference Number:	17/2/3 GS-172
Project Title:	BA FOR THE PROPOSED C3 EXPANSION PROJECT AT THE SASOL SECUNDA INDUSTRIAL COMPLEX, MPUMALANGA
Name of Responsible Official:	MISS NELISIWE MLANGENI

(For official use only)

NEAS Reference Number:	
Date Received:	

Kindly note that:

1. Required information must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. Tables can be extended as each space is filled with typing.
2. Where applicable **black out** the boxes that are not applicable in the form.
3. An incomplete report may be returned to the applicant for revision.
4. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
5. All reports (draft and final) must be submitted to the Department at the address of the relevant **DISTRICT OFFICE** given below or by delivery thereof to the relevant **DISTRICT OFFICE**. Should the reports not be submitted at the relevant district office, they will not be considered.
6. No faxed or e-mailed reports will be accepted.
7. One copy of the draft version of this report must be submitted to the relevant district office. The case officer may request more than one copy in certain circumstances.
8. **Copies of the draft report must be submitted to the relevant State Departments / Organs of State for comment.** In order to give effect to Regulation 56(7), proof of submission/delivery of the draft documents to the State Departments / Organs of State must be attached to the draft version of this report.
9. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.

9. All specialist reports must be appended to this document, and all specialists must complete a declaration of independence, which is obtainable from the Department.

DEPARTMENTAL DETAILS

HEAD OFFICE (18 Jones Street, Nelpruit)	EHLANZENI DISTRICT (50 Murray Street, Nelspruit)	NKANGALA DISTRICT (Pavilion Centre, Cnr Botha & Northey Streets, Witbank)	GERT SIBANDE DISTRICT (13 De Jager Street, Ermelo)
Attention: Directorate: Environmental Impact Management Private Bag X 11215 Nelspruit, 1200 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: (013) 759 4000 Fax (013) 759 4165	Attention: Directorate: Environmental Impact Management Private Bag X 11215 Nelspruit, 1200 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0824068831 Fax: Email: nvmdhluli@mpg.gov.za	Attention: Directorate: Environmental Impact Management P. O. Box 7255 Witbank, 1035 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0136902595/6901358/0766441707 Fax: Email:dtswai@wit.mpu.gov.za	Attention: Directorate: Environmental Impact Management P. O. Box 2777 Ermelo, 2351 Queries should be directed to the Directorate: Environmental Impact Management at: Tel: 0178192828/9 0178114815 0798419582 Fax: E mail:stmarebane@mpg.gov.za

Applications to be sent direct to district office

SECTION A: BACKGROUND INFORMATION

Project applicant:	Sasol Polymers (Pty) Ltd		
Trading name (if any):			
Contact person:	Ludwig van Niekerk		
Physical address:	Polymers Road, Sasol Works, Secunda		
Postal address:	PO Box 1928 Secunda		
Postal code:	2302	**Cell:**	
Telephone:	(017) 611 2205	**Fax:**	017 611 2382
E-mail:	Ludwig.vanniekerk@sasol.com		

Environmental Assessment Practitioner:	Royal HaskoningDHV		
Contact person:	Prashika Reddy		
Postal address:	PO Box 25302, Monument Park, Pretoria		
Postal code:	0105	Cell:	083 284 8687
Telephone:	012 367 5973	Fax:	012 367 5878
E-mail:	Prashika.reddy@rhdhv.com		
Qualifications & relevant experience	Prashika Reddy is a senior environmental scientist / principal associate (BSc Honours – Geography) with experience in various environmental fields including: environmental impact assessments, environmental management plans/programmes, public participation and environmental monitoring and auditing. Ms Reddy has extensive experience in compiling environmental reports (Screening, Scoping, EIA and Status Quo Reports).		
Professional affiliation(s) (if any)	Registered Professional Natural Scientist (*Pr Sci Nat* 400133/10) with the South African Council for Natural Scientific Professions (SACNASP).		

SECTION B: DETAILED DESCRIPTION OF THE PROPOSED ACTIVITY

Describe the activity, which is being applied for, in detail. The description must include the size of the proposed activity (or in the case of linear activities, the length) and the size of the area that will be transformed by the activity.

The C3 expansion project was initiated to address an estimated 105 ktpa (kilo tons per annum) additional propylene that will be available in 2014 as a result of various optimisation projects on the upstream Sasol facilities. An opportunity was identified for the additional propylene to be utilised as feed for the polypropylene (PP) plants, namely PP1 and PP2.

All the additional propylene will be converted to polypropylene by debottlenecking both the existing PP1 and PP2 plants so as to process the required additional capacity of 105 ktpa. The additional propylene will be split between the two plants: PP1 will convert additional 30 ktpa while PP2 will convert additional 75 ktpa. The PP1 plant has been in operation from February 1990 and has a capacity of 220000 tpa (tons per annum) whereas the PP2 plant has been in operation from December 2007 with a capacity of 300000 tpa.

The operating intent of the PP plants is the maximum conversion of propylene and ethylene from Sasol Synfuels into polypropylene pellets via a polymerization process. The products from this reaction are Homopolymers (*constituting only propylene*), Impact Copolymers (*constituting propylene and high concentration of ethylene*) and Random Copolymers (*propylene and low concentration of ethylene*). Presently, the two PP plants produce about 26 different grades of polypropylene for various uses. Both Impact Copolymers and Random Copolymers consist of both ethylene and propylene. The difference is the amount of ethylene in the polymer as well as the way in which they are produced.

The C3 expansion project involves upgrading and implementing changes to the existing PP1 and PP2 process equipment to accommodate the increase in throughput.

	PP 1 Plant	PP 2 Plant
Reactors	Comprises of two reactor trains: **Train 1:** A purely homopolymer producing system. **Train 2:** Has the functionality of running both homopolymer and impact copolymer depending on market demand.	Comprises of two reactors in series which can produce homopolymer, impact copolymer and random copolymer.
Process	In trains 1 and 2, propylene is polymerized in the presence of a catalyst, co-catalyst, modifier and hydrogen to form polypropylene powder. This powder is then conveyed to purge vessels where unreacted monomer is recovered back to the process. The hydrocarbon-free powder is then transferred to the extrusion section via rotary feeders. The polypropylene powder is mixed with additives and extruded	In the first reactor propylene is polymerized in the presence of a catalyst, co-catalyst, modifier and hydrogen to form polypropylene powder. This powder is transferred to the Blowcase system where unreacted propylene is recycled back to the first reactor. The powder is then transferred to the second reactor where further reaction occurs, allowing for maximum catalyst yields. The powder from the second reactor is pneumatically conveyed to the Baghouse

	through the polymer extruders. The pellets produced in the extruders are then transferred to blending silos where the product is homogenized. The final blended product is then conveyed to the bagging silos for temporary storage. The bagging plant is responsible for the bagging of the final product, for transportation to the various clients. Depending on the customer requirements, the pellets from the bagging silos will be packaged in 25 kg bags by the bagging and palletizing line, 1.25 ton bulk bags by the bulk bag machine or into tankers via the tanker loading silos.  **Figure 1: Photo of polypropylene pellets**	filter where unreacted propylene is recycled back to the first reactor. The hydrocarbon-free powder is then transferred to the extrusion section via rotary feeders. The polypropylene powder is mixed with additives and extruded through the polymer extruders. The pellets produced in the extruder are then transferred to blending silos where the product is homogenized. The final blended product is then conveyed to the bagging silos for temporary storage. The bagging plant is responsible for the bagging of the final product for transportation to the various clients. Depending on the customer requirements, the pellets from the bagging silos will be packaged in 25 kg bags by the bagging and palletizing lines into tankers via the tanker loading silos.
Impacted Equipment	• A new catalyst feeding system will be installed to feed train 2 during certain grade productions for better final product properties. • Modifications will be done on the powder conveying system in order to reduce fouling of coolers which will result in increased availability of the system • The extruders pelletizing units will be upgraded for improved equipment availability. • The bagging modifications will be done to optimize and to increase availability of the bagging and logistics plant.	• Due to the elevated throughputs the catalyst and co-catalyst systems will need to be upgraded increase capacity in order to meet debottlenecking requirements • The reactors recycle system will be upgraded in order to meet the higher reactor throughputs. These modifications will involve upgrades of the condensers and compressors and associated piping and instrumentation. • With the higher powder conveying rates from the first to second reactor, the blowcase system requires a higher working volume. Modifications will be done on the existing vessels in order to meet the requirements of the increased powder volumes. • Most of the extrusion equipment has been overdesigned, there are only minor modifications proposed in the existing equipment to accommodate the higher throughputs.

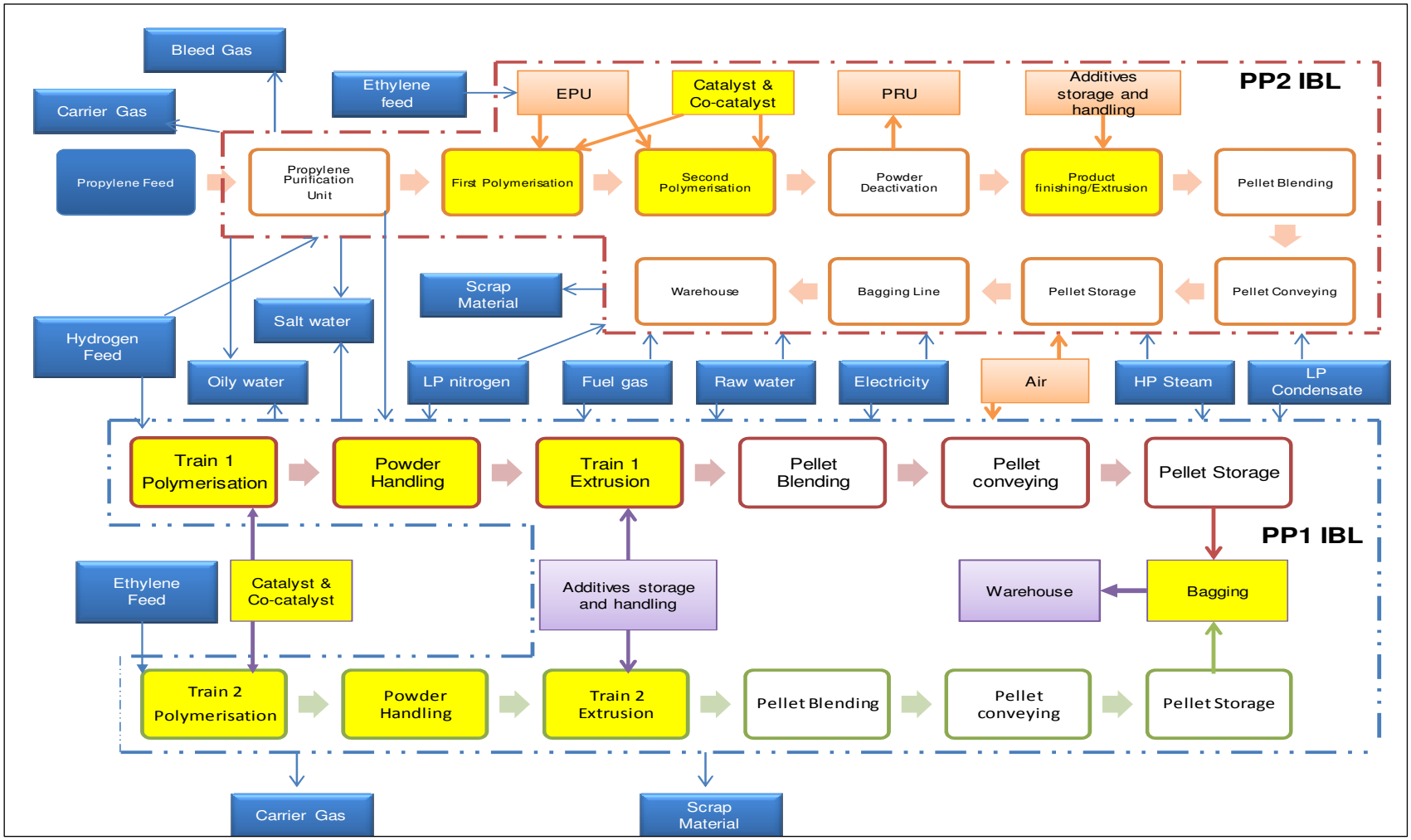

Figure 2: Block flow diagram showing an overview of the Polypropylene Plant (yellow blocks indicate affected areas)

SECTION C: PROPERTY/SITE DESCRIPTION

Provide a full description of the preferred site alternative (farm name and number, portion number, registration division, erf number etc.):

Erf 8488

Indicate the position of the activity using the latitude and longitude of the centre point of the preferred site alternative. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection. The position of alternative sites must be indicated in Section B of this document.

The GPS coordinates reflect the NW, NE, SE & SW corners of the plant respectively:

Latitude			Longitude		
26°	33'	07.8"S	29°	11'	07.2"E
26°	33'	09.9"S	29°	11'	34.2"E
26°	33'	20.4"S	29°	11'	33.2"E
26°	33'	17.0"S	29°	11'	06.1"E

In the case of linear activities:

- Starting point of the activity
- Middle point of the activity
- End point of the activity

Latitude (S):		Longitude (E):	
°	'	°	'
°	'	°	'
°	'	°	'

SITE OR ROUTE PLAN
A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as an appendix to this document.

The site or route plans must be at least A3 and must include the following:

6.1 a reference no / layout plan no., date, and a legend / land use table
6.2 the scale of the plan which must be at least a scale of 1:2000;
6.3 the current land use as well as the land use zoning of each of the properties adjoining the site or sites;
6.4 the exact position of each element of the application as well as any other structures on the site;
6.5 the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, street lights, sewage pipelines, storm water infrastructure and telecommunication infrastructure;
6.6 all indigenous trees taller than 1.8 metres and all vegetation of conservation concern (protected, endemic and/or red data species);
6.8 servitudes indicating the purpose of the servitude;
6.9 sensitive environmental elements within 100 metres of the site or sites including (but not limited thereto):
- watercourses and wetlands;
- the 1:100 year flood line;
- ridges;
- cultural and historical features;

6.9 10 metre contour intervals

SITE PHOTOGRAPHS
Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached as an appendix to this form.

FACILITY ILLUSTRATION
A detailed illustration of the activity must be provided at a scale of 1:200 as an appendix for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

SECTION D: BASIC ASSESSMENT REPORT

Prepare a basic assessment report that complies with Regulation 22 of the Environmental Impact Assessment Regulations, 2010. The basic assessment report must be attached to this form and must contain all the information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation 25, and must include:

		(Checklist for official use only)
1.	A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	
2.	An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report.	

3.	Details of the public participation process conducted in terms of Regulation 21(2)(a) in connection with the application, including – (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the proposed application have been displayed, placed or given; (iii) a list of all persons, organisations and organs of state that were registered in terms of regulation **55** as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues;	
4.	A description of the need and desirability of the proposed activity;	
5.	A description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity;	
6.	A description and assessment of the significance of any environmental impacts, including— (i) cumulative impacts, that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity; (ii) the nature of the impact; (iii) the extent and duration of the impact; (iv) the probability of the impact occurring; (v) the degree to which the impact can be reversed; (vi) the degree to which the impact may cause irreplaceable loss of resources; and (vii) the degree to which the impact can be mitigated;	
7.	Any environmental management and mitigation measures proposed by the EAP;	
8.	Any inputs and recommendations made by specialists to the extent that may be necessary;	
9.	A draft environmental management programme containing the aspects contemplated in regulation **33**;	
10.	A description of any assumptions, uncertainties and gaps in knowledge;	
11.	A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	
12.	Any representations, and comments received in connection with the application or the basic assessment report;	
13.	The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants;	
14.	Any responses by the EAP to those representations, comments and views;	
15.	Any specific information required by the competent authority; and	
16.	Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	

The basic assessment report must take into account -

(a) any relevant guidelines; and

(b) any departmental policies, environmental management instruments and other decision making instruments that have been developed or adopted by the competent authority in respect of the kind of activity which is the subject of the application.

* In terms of Regulation 22(4), the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in subregulation 22(2)(h), exist.

Have reasonable and feasible alternatives been identified, described and assessed?	**YES**	NO
If NO, the motivation and investigation required in terms of Regulation 22(4) must be attached as an Appendix to this document		

SECTION E: CONSULTATION WITH OTHER STATE DEPARTMENTS

Provide a list of all State Departments / Organs of State that have been consulted and registered as interested and affected parties, and to whom draft reports have been submitted for comment. **Proof of submission / delivery of the draft report to all State Department / Organs of State must be attached to this document.**

Department:	Department of Agriculture, Rural Development and Land Administration		
Contact person:	Jan Venter		
Postal address:	Private Bag X 9019, Ermelo		
Postal code:	2350	**Cell:**	082 653 7611
Telephone:		**Fax:**	086 657 7260
E-mail:	jventer@mpg.gov.za; jv16@telkomsa.net		

Department:	[redacted]		
Contact person:			
Postal address:			
Postal code:		**Cell:**	
Telephone:		**Fax:**	
E-mail:			

SECTION E: APPENDICES

The following appendices must be attached to the basic assessment report as appropriate:

Site plan(s)

Photographs

Facility illustration(s)

Specialist reports

Comments and responses report

Other information

Kalele, Phyllis

From: postmaster@dhv.com
Sent: Wednesday, June 26, 2013 2:16 PM
To: Kalele, Phyllis
Subject: Delivery Status Notification (Relay)
Attachments: ATT55419.txt; BASIC ASSESSMENT FOR THE PROPOSED C3 EXPANSION PROJECT AT THE SASOL INDUSTRIAL COMPLEX IN SECUNDA

This is an automatically generated Delivery Status Notification.

Your message has been successfully relayed to the following recipients, but the requested delivery status notifications may not be generated by the destination.

jv16@telkomsa.net
jventer@mpg.gov.za
jan.agric@gmail.com

DRAFT BASIC ASSESSMENT REPORT FOR THE PROPOSED C3 EXPANSION PROJECT AT THE SASOL INDUSTRIAL COMPLEX IN SECUNDA, MPUMALANGA

Sasol Polymers (Pty) Ltd

MDEDET REF: 17/2/3 GS-172

June 2013

DOCUMENT DESCRIPTION

Client:
Sasol Polymers (Pty) Ltd

Project Name:
Draft Basic Assessment Report for the Proposed Sasol C3 Expansion Project at the Sasol Industrial Complex in Secunda, Mpumalanga

Royal HaskoningDHV Reference Number:
T01.PTA.000509

Authority Reference:
MDEDET Ref: 17/2/3 GS-172

Compiled by:
Phyllis Kalele

Date:
June 2013

Location:
Pretoria

Reviewed by:
Prashika Reddy

Approved by:
Prashika Reddy

_____
Signature

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

APPENDIX A: LOCALITY MAP
APPENDIX B: ACCEPTANCE OF APPLICATION
APPENDIX C: PUBLIC PARTICIPATION DOCUMENTS
APPENDIX D: ENVIRONMENTAL MANAGEMENT PROGRAMME
APPENDIX E: PLOT PLAN

ACRONYMS

BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GMLM	Govan Mbeki Local Municipality
GN	Government Notice
GSDM	Gert Sibande District Municipality
LIDP	Local Integrated Development Plan
PP	Polypropylene
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
NEMA	National Environmental Management Act
RHDHV	Royal HaskoningDHV

1 INTRODUCTION

The C3 expansion project was initiated to address an estimated 105 ktpa (kilo tons per annum) additional propylene that will be available in 2014 as a result of various optimisation projects on the upstream Sasol facilities. An opportunity was identified for the additional propylene to be utilised as feed for the polypropylene (PP) plants, namely PP1 and PP2.

All the additional propylene will be converted to polypropylene by debottlenecking both the existing PP1 and PP2 plants so as to process the required additional capacity of 105 ktpa. The additional propylene will be split between the two plants: PP1 will convert additional 30 ktpa while PP2 will convert additional 75 ktpa. The PP1 plant has been in operation from February 1990 and has a capacity of 220000 tpa (tons per annum) whereas the PP2 plant has been in operation from December 2007 with a capacity of 300000 tpa.

The operating intent of the PP plants is the maximum conversion of propylene and ethylene from Sasol Synfuels into polypropylene pellets via a polymerization process. The products from this reaction are Homopolymers (*constituting only propylene*), Impact Copolymers (*constituting propylene and high concentration of ethylene*) and Random Copolymers (*propylene and low concentration of ethylene*). Presently, the two PP plants produce about 26 different grades of polypropylene for various uses. Both Impact Copolymers and Random Copolymers consist of both ethylene and propylene. The difference is the amount of ethylene in the polymer as well as the way in which they are produced.

The C3 expansion project involves upgrading and implementing changes to the existing PP1 and PP2 process equipment to accommodate the increase in throughput.

The site of the proposed project is located in the existing PP1 and PP2 plants within the Sasol Polymers plant at the Sasol Secunda Industrial Complex (refer to **Appendix A** for the Locality map).

1.1 Project Need and Desirability

The implementation of the proposed project will enable Sasol to utilise the additional propylene to produce polypropylene pellets. Without the C3 expansion project, the additional propylene will have to be disposed of as waste via flaring which would otherwise have been converted into a higher value product.

Overall, the option of expanding the current polypropylene plants to accommodate the increased throughput of propylene compared to disposing the polypropylene to landfills is more environmentally desirable.

1.2 Approach to the Basic Assessment Study

The environmental impacts associated with the proposed project require investigation in compliance with the Environmental Impact Assessment (EIA) Regulations (2010) published in Government Notice (GN) No. R. 543 to No. R. 544 and read with Section 24 (5) of the National Environmental Management Act - NEMA (Act No 107 of 1998) as amended.

The required environmental study is the undertaking of a Basic Assessment (BA) process which is being conducted in 3 phases (see **Figure 1**) namely:

- Phase 1: Project inception;
- Phase 2: Basic Assessment and Environmental Management Programme; and
- Phase 3: Authority review and response.

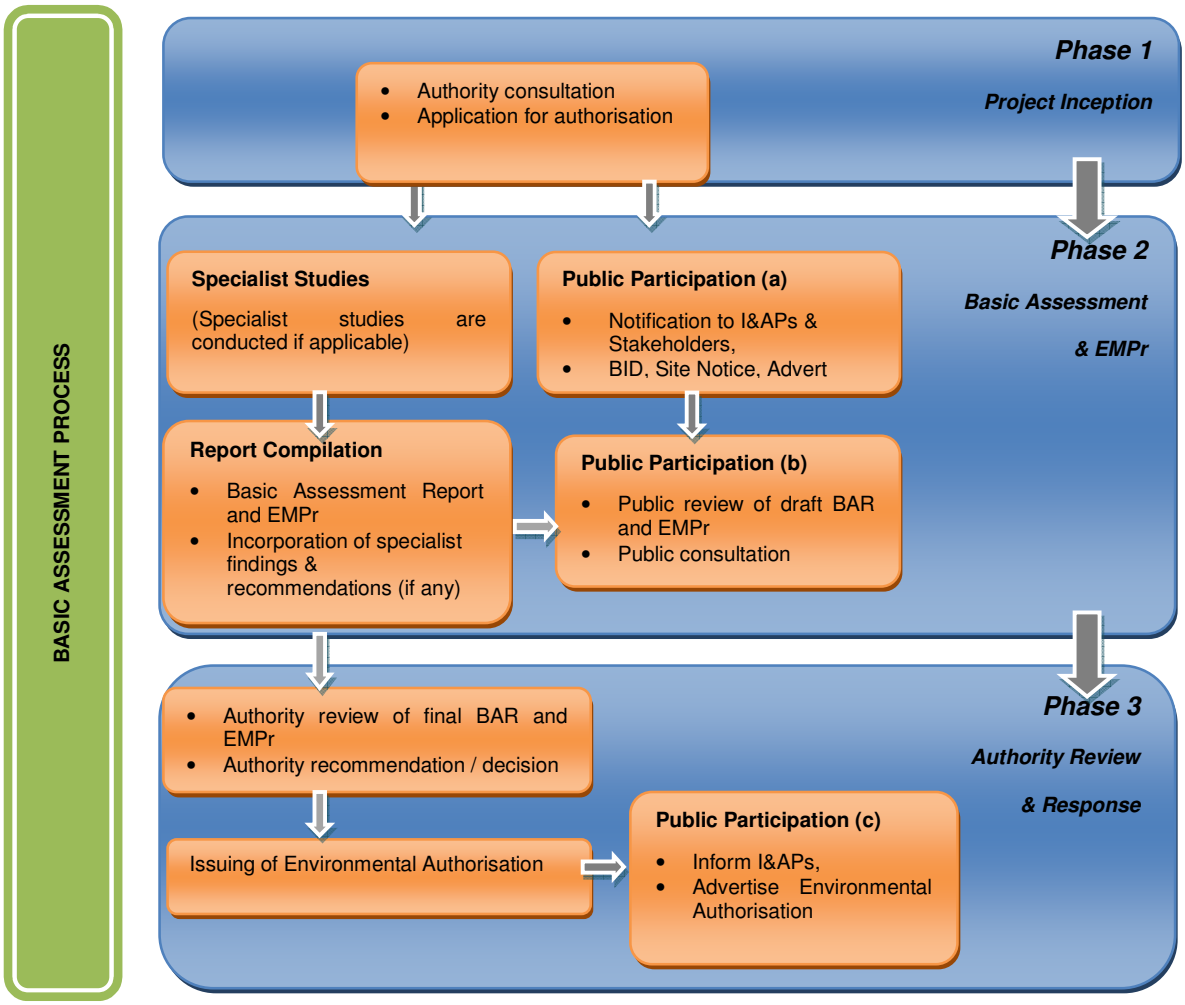

Figure 1: Basic Assessment Process

The draft Basic Assessment Report (BAR) has been compiled according to the guidelines provided in Section 22 of GN R.543 of the EIA Regulations (2010) – refer to table below.

Content of Basic Assessment Report	Chapter
(a) Details of (i) the EAP who prepared the report; and (ii) the expertise of the EAP to carry out scoping procedures.	1
(b) A description of the proposed activity.	3
(c) A description and a map of the property on which the activity is to be undertaken and the location of the activity on the property, or if it is (i) a linear activity, a description of the route of the activity; or (ii) an ocean-based activity, the coordinates where the activity is to be undertaken.	3
(d) A description of the environment that may be affected by the proposed activity	6

Content of Basic Assessment Report	Chapter
and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity.	
(e) An identification of all legislation and guidelines that have been considered in the preparation of the basic assessment report.	2
(f) Details of the public participation process conducted in terms of regulation **21**(2)(a) in connection with the application including: (i) the steps that were taken to notify potentially interested and affected parties of the proposed application; (ii) proof that notice boards, advertisements and notices notifying potentially interested and affected parties of the application have been displayed, placed or given; (iii) a list of all persons, organizations or organs of state that were registered in terms of regulation 55 as interested and affected parties in relation to the application; and (iv) a summary of the issues raised by interested and affected parties, the date of receipt of and the response of the EAP to those issues	5
(g) A description of the need and desirability of the proposed activity	1
(h) A description of any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages that the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity.	4
(i) A description and assessment of the significance of any environmental impacts, including: i. Cumulative impacts that may occur as a result of the undertaking of the activity or identified alternatives or as a result of any construction, erection or decommissioning associated with the undertaking of the activity. ii. The nature of the impact. iii. The extent and duration of the impact. iv. The probability of the impact occurring. v. The degree to which the impact can be reversed. vi. The degree to which the impact may cause irreplaceable loss of resources; and vii. The degree to which the impact can be mitigated.	8
(j) Any environmental management and mitigation measures proposed by the EAP.	8
(k) Any inputs and recommendations made by specialists to the extent that may be necessary.	N/A
(l) A draft Environmental Management Programme containing the aspects contemplated in regulation **33.**	A
(m) A description of any assumptions, uncertainties and gaps in knowledge.	1
(n) A reasoned opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation.	9

Content of Basic Assessment Report	Chapter
(o) Any representations and comments received in connection with the application or the basic assessment report.	Appendix C
(p) The minutes of any meetings held by the EAP with interested and affected parties and other role players which record the views of the participants.	-
(q) Any responses by the EAP to those representations, comments and views.	Appendix C
(r) Any specific information required by the competent authority; and	-
(s) Any other matters required in terms of sections 24(4)(a) and (b) of the Act.	-

1.3 Details of the Environmental Assessment Practitioner

RHDHV has been appointed as the independent EAP by Sasol Polymers, to undertake the appropriate environmental studies for this proposed project. The professional team of RHDHV have considerable experience in the environmental management and EIA fields.

RHDHV has been involved in and/or managed several of the largest Environmental Impact Assessments undertaken in South Africa to date. A specialist area of focus is on the assessment of multi-faceted projects, including the establishment of linear developments (national and provincial roads, and power lines), bulk infrastructure and supply (e.g. wastewater treatment works, pipelines, landfills), electricity generation and transmission, the mining industry, urban, rural and township developments, environmental aspects of Local Integrated Development Plans (LIDPs), as well as general environmental planning, development and management.

The particulars of the EAP are presented in **Table 1** below:

Table 1: Details of the EAP

Details	
Consultant:	Royal HaskoningDHV
Contact Persons:	Phyllis Kalele and Prashika Reddy
Postal Address	PO Box 25302, Monument Park, 0105
Telephone:	012 367 5916 / 012 367 5973
Facsimile:	012 367 5878
E-mail:	prashika.reddy@rhdhv.com / phyllis.kalele@rhdhv.com
Expertise:	Phyllis Kalele is a Senior Environmental Consultant with a MSc. Environment and Development. Ms. Kalele has experience in various facets of environmental management including conducting the Public Participation process; compiling Environmental Impact Reports and Environmental Management Programmes; conducting environmental awareness training; and conducting legal compliance audits. She is a registered Professional Natural Scientist (*Pr Sci Nat* 400456/11) with the South African Council for Natural Scientific Professions (SACNASP). Prashika Reddy is a Principal Associate / Senior Environmental Scientist (*Pr Sci Nat* 400133/10) with a BSc Honours in Geography. Ms Reddy has the necessary experience in various

Details	
	environmental fields including: environmental impact assessments, environmental management plans/programmes, public participation and environmental monitoring and auditing. Ms Reddy has extensive experience in compiling environmental reports (Screening, Scoping, EIA and *Status Quo* Reports). Ms Reddy is/has been part of numerous multi-faceted large–scale projects, including the establishment of linear developments (roads, and power lines); industrial plants; electricity generation plants and mining-related projects.

1.4 Assumptions and Gaps in Knowledge

- All information provided by Sasol Polymers (Pty) Ltd to the EAP was correct and valid at the time it was provided.
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process.
- All data from unpublished research is valid and accurate.
- The scope of this investigation is limited to assessing the potential environmental impacts associated with the C3 expansion project.

2 LEGAL REQUIREMENTS

In order to protect the environment and ensure that this development is undertaken in an environmentally responsible manner, there are a number of significant pieces of environmental legislation that will need to be complied with. They include the following:

2.1 The Constitution of South Africa

The Bill of Rights, in the Constitution of South Africa (No. 108 of 1996), states that everyone has a right to a non-threatening environment and requires that reasonable measures be applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in NEMA and given further expression.

2.2 National Environmental Management Act (No 107 of 1998)

The National Environmental Management Act (No 107 of 1998, "NEMA")(as amended) states that the principles of Integrated Environmental Management (IEM) should be adhered to in order to ensure sustainable development. A vital underpinning of the IEM procedure is accountability to the various parties that may be interested in or affected by a proposed development. Public participation is a requirement of the IEM procedure, in terms of the identification of potentially significant environmental impacts during the Scoping Phase. The IEM procedure aims to ensure that the environmental consequences of development proposals are understood and adequately considered during all stages of the project cycle, and that negative aspects are resolved or mitigated and positive aspects enhanced. Furthermore, Section 28(1) of the Act states that "every person who causes or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring". If such pollution cannot be prevented then appropriate measures must be taken to minimise or rectify such pollution.

In June 2010, new EIA Regulations were promulgated in order to revise the procedure and criteria relating to environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment or, where it cannot be avoided, to mitigate and effectively manage these impacts and optimise positive environmental impacts. These Regulations and a revised set of Listed Activities (Listing Notices 1, 2 and 3) came into force on 02 August 2010. The listed activities applicable to the project are listed in **Table 2** below.

Table 2: Listed activities according to Listing Notice 2 [EIA Regulations (2010)]

Listing Notice 1 (GN R.544) Activity	Description	Applicability
42	The expansion of facilities for the storage, or storage and handling, of a dangerous good, where the capacity of such storage facility will be expanded by 80 cubic metres or more.	The PP1 and PP2 plants will be modified in order to process additional 105 ktpa of propylene.
48	The expansion of facilities for the refining, extraction or processing of gas, oil or petroleum products where the installed capacity of the facility will be increased by 50 cubic metres or more per day, excluding facilities for the refining, extraction or processing of gas from landfill sites.	The PP1 and PP2 plants will be modified in order to process additional 105 ktpa of propylene.

2.3 National Environmental Management: Waste Act (No 59 of 2008)

The National Environmental Management: Waste Act (Act No 59 of 2008) reforms the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

2.4 National Water Act (No 36 of 1998)

The major objectives of the National Water Act (NWA) are to:

- Aid in providing basic human needs;
- Meet the growing demand of water in a sustainable manner;
- Ensure equal access to water and use of water resources;
- Protect the quality of water of natural resources;
- Ensure integrated management of water resources;
- Foster social and economic development; and
- Conserve aquatic and related ecosystems.

2.5 National Environmental Management: Air Quality Act (No. 39 of 2004)

The National Environmental Management (NEM): Air Quality Act (No. 39 of 2004) (AQA) has shifted the approach of air quality management from source-based control to receptor-based control. The main objectives of the Act are to:

- Give effect to everyone's right 'to an environment that is not harmful to their health and well-being'.
- Protect the environment by providing reasonable legislative and other measures that (i) prevent pollution and ecological degradation, (ii) promote conservation and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The AQA makes provision for the setting and formulation of national ambient air quality standards for 'substances or mixtures of substances which present a threat to health, well-being or the environment'. More stringent standards can be established at the provincial and local levels.

The control and management of emissions in the AQA relates to the listing of activities that are sources of emission and the issuing of emission licenses. Listed activities are defined as activities which 'result in atmospheric emissions and are regarded as having a significant detrimental effect on the environment, including human health. Listed activities have been identified by the Minister of the Department of Environmental Affairs and atmospheric emission standards have been established for each of these activities. These listed activities now require an atmospheric emission license (AEL) to operate. The issuing of emission licenses for Listed Activities is the responsibility of the Metropolitan and District Municipalities.

In addition, the Minister may declare any substance contributing to air pollution as a priority pollutant. Any industries or industrial sectors that emit these priority pollutants will be required to implement a Pollution Prevention Plan. Municipalities are required to 'designate an air quality officer to be responsible for co-ordinating

matters pertaining to air quality management in the Municipality'. The appointed Air Quality Officer is responsible for the issuing of atmospheric emission licenses.

2.5.1 Occupational Health and Safety Act (No 85 of 1993)

The Occupational Health and Safety Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work, against hazards to health and safety arising out of or in connection with the activities of persons at work.

2.6 Other Relevant Acts, Guidelines, Departmental Policies and Environmental Management Instruments

OTHER RELEVANT ACTS, GUIDELINES, DEPARTMENTAL POLICIES, ENVIRONMENTAL MANAGEMENT INSTRUMENTS
Hazardous Substance Act (No 15 of 1973) and Regulations
Gert Sibande District Municipality Spatial Development Framework (2009)
South African National Standard SANS 10103:2008 (*The Measurement and Rating of Environmental Noise with Respect to Annoyance and Speech Communication)*
National Noise Control Regulations (1998)
Sasol Safety, Health and Environmental Policy

3 PROJECT DESCRIPTION

3.1 Project Location

The site of the proposed project is located in the existing PP1 and PP2 plants within the Sasol Polymers plant at the Sasol Secunda Industrial Complex. **Figure 2** below shows the boundaries of the area within which the proposed project will be implemented.

Figure 2: Location of the proposed project

The coordinates of the site boundaries are shown in **Table 3** below.

Table 3: Coordinates of the site boundary within the Sasol complex

Corner	Coordinates
1	26°33'07.8"S; 29°11'07.2"E
2	26°33'09.9"S; 29°11'34.2"E
3	26°33'20.4"S; 29° 11'33.2"E
4	26°33'17.0"S; 29°11'06.1"E

3.2 Upgrade of PP1 and PP2 Process Equipment

As stated under section 1, the C3 expansion project was initiated to address an estimated 105 ktpa (kilo tons per annum) additional propylene that will be available in 2014 as a result of various optimisation projects on the upstream Sasol Synfuel facilities. The C3 expansion project involves upgrading and implementing changes to the existing PP1 and PP2 process equipment to accommodate the increase in throughput. This upgrade will entail the following:

Upgrade	PP Plant 1	PP Plant 2
Reactors	Comprises of two reactor trains: **Train 1:** A purely homopolymer producing system. **Train 2:** Has the functionality of running both homopolymer and impact copolymer depending on market demand.	Comprises of two reactors in series which can produce homopolymer, impact copolymer and random copolymer.
Process	In trains 1 and 2, propylene is polymerized in the presence of a catalyst, co-catalyst, modifier and hydrogen to form polypropylene powder. This powder is then conveyed to purge vessels where unreacted monomer is recovered back to the process. The hydrocarbon-free powder is then transferred to the extrusion section via rotary feeders. The polypropylene powder is mixed with additives and extruded through the polymer extruders. The pellets produced in the extruders are then transferred to blending silos where the product is homogenized. The final blended product is then conveyed to the bagging silos for temporary storage. The bagging plant is responsible for the bagging of the final product, for transportation to the various clients. Depending on the customer requirements, the pellets from the bagging silos will be packaged in 25 kg bags by the bagging and palletizing line, 1.25 ton bulk bags by the bulk bag machine or into tankers via the tanker loading silos.  **Figure 3: Photo of polypropylene pellets**	In the first reactor propylene is polymerized in the presence of a catalyst, co-catalyst, modifier and hydrogen to form polypropylene powder. This powder is transferred to the Blowcase system where unreacted propylene is recycled back to the first reactor. The powder is then transferred to the second reactor where further reaction occurs, allowing for maximum catalyst yields. The powder from the second reactor is pneumatically conveyed to the Baghouse filter where unreacted propylene is recycled back to the first reactor. The hydrocarbon-free powder is then transferred to the extrusion section via rotary feeders. The polypropylene powder is mixed with additives and extruded through the polymer extruders. The pellets produced in the extruder are then transferred to blending silos where the product is homogenized. The final blended product is then conveyed to the bagging silos for temporary storage. The bagging plant is responsible for the bagging of the final product for transportation to the various clients. Depending on the customer requirements, the pellets from the bagging silos will be packaged in 25 kg bags by the bagging and palletizing lines into tankers via the tanker loading silos.

Upgrade	PP Plant 1	PP Plant 2
Impacted Equipment	• A new catalyst feeding system will be installed to feed train 2 during certain grade productions for better final product properties. • Modifications will be done on the powder conveying system in order to reduce fouling of coolers which will result in increased availability of the system • The extruders pelletizing units will be upgraded for improved equipment availability. • The bagging modifications will be done to optimize and to increase availability of the bagging and logistics plant.	• Due to the elevated throughputs the catalyst and co-catalyst systems will need to be upgraded increase capacity in order to meet debottlenecking requirements • The reactors recycle system will be upgraded in order to meet the higher reactor throughputs. These modifications will involve upgrades of the condensers and compressors and associated piping and instrumentation. • With the higher powder conveying rates from the first to second reactor, the blowcase system requires a higher working volume. Modifications will be done on the existing vessels in order to meet the requirements of the increased powder volumes. • Most of the extrusion equipment has been overdesigned, there are only minor modifications proposed in the existing equipment to accommodate the higher throughputs.

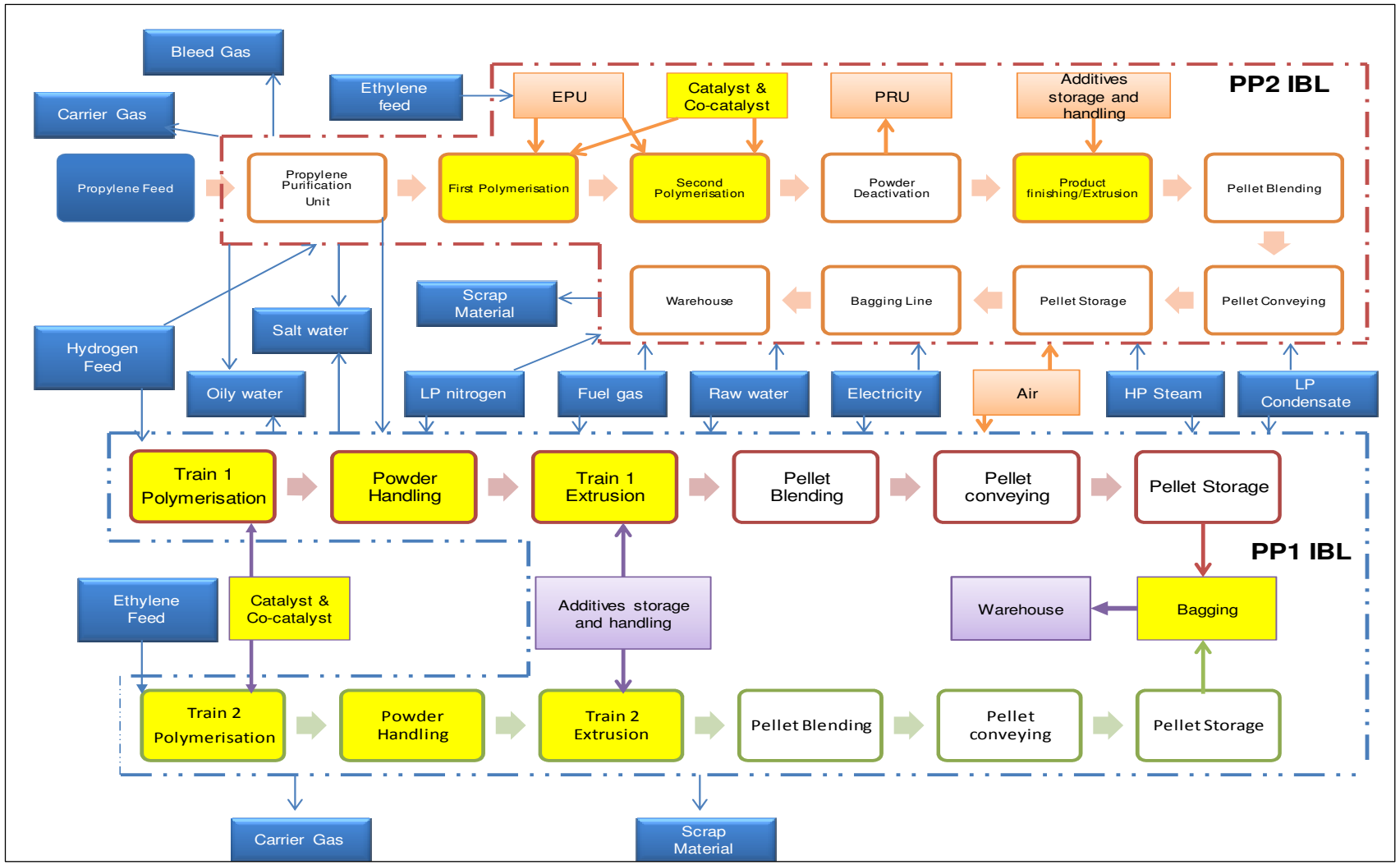

Figure 4: Block flow diagram showing the Polypropylene Plant overview (Yellow blocks indicating affected areas)

3.3 Propylene Characteristics and Uses

Propylene is "an unsaturated organic compound" also known as *propene, methylethene, 1-propylene* or *methylethylene*. Propylene is produced from a variety of fossil fuel sources such as natural gas, petroleum and coal. The properties of propylene are indicated in the table below:

Table 4: Propylene properties

Characteristic	
Molecular formula	C_3H_6
Appearance	Colourless gas with a slight odour
Density	1.81 kg/m^3, gas (1.013 bar, 15 ℃) 613.9 kg/m^3, liquid
Melting point	– 185.2 ℃, 88 K, -301 ℉
Boiling point	– 47.4 ℃, 226 K, -54 F
Water solubility	Partly soluble
Main hazard	Volatile, highly flammable (*flash point of -108 ℃ and self-ignition temperature is 497 ℃*), an asphyxiant (causes suffocation), vapours may cause drowsiness and dizziness and has mild anaesthetic effect.

Propylene is a popular raw material used in the petrochemical industry for manufacturing products such as polypropylene.

3.4 Polypropylene Characteristics and Uses

As mentioned in section 3.3 above, polypropylene which is also known as propylene polymer and propene polymer is produced from propylene. The properties of propylene are shown below:

Table 5: Polyproylene properties

Characteristic	
Molecular formula	$(C_3H_6)_n$
Appearance	Solid; translucent to white colour; has none to slightly waxy odour
Density	0.88 g/cm^3, amorphous 0.92 g/cm^3, crystalline
Melting point	130–165 C (266–337 ℉). self ignition temperature is 390 ℃
Water solubility	Insoluble

Polypropylene has a wide range of uses which includes production of woven cloth, ropes, thermal underwear, bags, carpets, rugs, mats, drums, spun-bonded non-woven fabrics (e.g. diapers, sanitary pads), buckets, tupperware, film, twin-wall extrusion sheeting, toys, furniture (e.g. chairs), roofing membranes, fibres, packaging crates, thin wall food packaging containers, laboratory equipment, loudspeakers, plastic moulds, stationery folders, storage boxes and vehicle components.

4 PROJECT ALTERNATIVES

In terms of the EIA Regulations, Section.28 (1) (c), feasible alternatives are required to be considered as part of the environmental investigations. In addition, the obligation that alternatives are investigated is also a requirement of Section 24(4) of the National Environmental Management Act (No 107 of 1998) (as amended). *An alternative in relation to a proposed activity refers to the different means of meeting the general purpose and requirements of the activity* (as defined in Government Notice R.543 of the EIA Regulations, 2010), which may include alternatives to:

a) the property on which or location where it is proposed to undertake the activity;

b) the type of activity to be undertaken;

c) the design or layout of the activity;

d) the technology to be used in the activity;

e) the operational aspects of the activity; and

f) the option of not implementing the activity.

4.1 Site Alternatives

Two alternatives will be considered for the implementation of the C3 expansion project: upgrade the current PP plants or construct a new PP plant.

Alternative	Description	Advantage / Disadvantage
Upgrade / Expansion of the Existing PP1 and PP2 Plants (Preferred)	During the planning of the C3 expansion project, a thorough investigation of the process was conducted. High rate trials were conducted together with the plant licensors to determine whether debottlenecking will be possible. Subsequently, opportunities for debottlenecking and optimisation of the existing PP plants were identified. Inventory of the hydrocarbons in the plant will remain the same and only residence time will be reduced. This implies that the main equipment capacities will not change; these include flare drums, reactors and separators.	**Advantages** The benefits of this option include: ✓ *This option is the most economical due to the fact that only few equipment will be upgraded.* ✓ *The reaction section of the unit will not be modified resulting in less capital injection than an option of building a new plant.* ✓ *The equipment to be replaced can be installed within a short period of time compared to construction of a new plant.* ✓ *Existing infrastructure for water and waste handling will be utilised even if the plants are upgraded.*
Construction of a New PP Plant **(Alternative 1)**	The second alternative is to build a new PP plant similar to the existing PP plants in order to process the additional propylene. The new PP plant would be constructed in close proximity to the existing PP plants.	**Disadvantages** This alternative is less desirable compared to expansion of the existing PP plants primarily because: ✓ *Construction of a brand new plant requires significant capital investment.* ✓ *Construction of a new plant takes a longer time compared to retrofitting an existing plant. Furthermore, the new plant would require additional water and waste handling facilities.* ✓ *The additional propylene will have to be flared until such time the construction of the plant is complete. This will result in the release of Carbon Dioxide, a well-known*

Alternative	Description	Advantage / Disadvantage
		greenhouse gas thus increasing the environmental footprint of the Sasol industrial complex.

4.2 Do Nothing / No-Go Alternative

Due to plant capacity constraints, the additional propylene resulting from the optimised operation of the Sasol Synfuels facility cannot be processed in the existing PP plants. If no expansion of the PP plants is undertaken to process the additional propylene, the propylene will be continuously flared within an existing flare within the Synfuels complex.

The flaring / burning of propylene is undesirable for the following reasons:

- Increased air quality impacts; this is because it produces carbon dioxide (CO_2) and carbon monoxide (CO). The flaring will increase the cumulative CO_2 footprint of the Sasol Industrial complex.
- It is uneconomical to burn a product that could be utilised for production purposes.

5 PUBLIC PARTICIPATION

One of the general objectives of integrated environmental management laid down in Section 23(2)(d) of NEMA is to "ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment". An inadequate and non-transparent public participation process (PPP) has the potential to provide a negative decision and perception regarding the proposed project.

The EIA Regulations (2010) places a lot of emphasis on the public participation process and have been revised to contain comprehensive guidelines to involve the public in the EIA process.

The primary aims of the public participation process include:

- Meaningful and timeous participation of interested and affected parties (I&APs);
- Identification of issues and concerns of key stakeholders and I&APs with regards to the proposed development, i.e. focus on important issues;
- Promotion of transparency and an understanding of the proposed project and its potential environmental (social and biophysical) impacts;
- Accountability for information used for decision-making;
- Serving as a structure for liaison and communication with I&APs;
- Assisting in identifying potential environmental (social and biophysical) impacts associated with the proposed development; and
- Inclusivity (the needs, interests and values of I&APs must be considered in the decision-making process).

The minimum requirements for public participation as contained in Chapter 6 of the EIA Regulations (2010) are contained hereunder and are discussed in detail in subsequent sections:

Public Participation Requirements according to Section 54 - 57 of GN R 543	Specific Actions to Ensure Compliance
Section 54 (2) (b) – The person conducting a public participation process must give written notice to the owner or person in control of that land if the owner is not the owner or person in control of the land; owners and occupiers of land adjacent to the site municipal councilor; municipality; organ of state having jurisdiction and any other party required by the competent authority.	Compile introductory letters to owners, adjacent landowners, municipal councilor, municipality and organ of state.
Section 54 (2) (a) – Fix a notice board at the site boundary or any alternative site applicable to the application	The notice board accordingly must – (a) give details of the application subject to public participation (b) state – i. that the application has been submitted to the CA ii. whether basic assessment or scoping procedures are being applied for iii. the nature and location of the activity to which the application relates iv. where further information on the application or activity can be obtained v. the manner in which and the person to whom representation in respect of the application may be made The notice board must be – (a) Of a size of at least 60cm by 42cm (b) Display the required information in lettering and format
Section 54 (2) (c) & (d) – Place an advert in one local newspaper or official *Gazette* and or placing an	An advert will be placed in the local newspaper/s and any other paper decided by the applicant to advertise the availability of

Public Participation Requirements according to Section 54 - 57 of GN R 543	Specific Actions to Ensure Compliance
advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or local municipality.	the draft and final BAR for review and public meetings as well advertising the environmental authorization.
Section 55 (1) – An EAP managing a application must open and maintain a register which contains the names, contact details and addresses of – **(a) All persons who as a consequence of the PPP have submitted written comments or attended meetings** **(b) All persons after completion of the PPP have requested in writing their names to be placed on a register** **(c) All organs of state which have jurisdiction in respect of the application.**	Comprehensive I&AP database/register will be opened and maintained.
Section 56 (1) a registered interested and affected party (I&AP) is entitled to comment, in writing, on all written submissions; including draft reports made to the CA within the timeframes that have been set by the CA or any extension of a timeframe agreed to by the EAP or applicant.	According to Section 56 (8) a timeframe of 40 days is provided to I&APs for comments on draft and final reports.
Section 56 (5) Registered I&APs must submit comments on draft reports to the EAP.	According to Section 56 (8) a timeframe of 40 days is provided to I&APs for comments on draft reports. All issues will be recorded in a Comments and Response Report.
Section 56 (6) Comments on final reports must be provided to the CA and a copy provided to the EAP.	A timeframe of 21 days is provided for registered I&APs to comment on the final reports. All comments must be forwarded to the CA and a copy furnished to the EAP.
Section 57 (1) The EAP must ensure that the comments of I&APs are recorded in reports and written comments including record of meetings are attached to the report submitted to the CA.	Compilation of Issues Trail/Comments and Responses Report that will form part of final reports.

5.1 Consultation with the Competent Authority

The competent authority, Mpumalanga Department of Economic Development, Environment and Tourism (MDEDET) reviewing the project and providing environmental authorisation was consulted from the outset of this study.

Authority consultation included the following activities:

- Submission of an application for environmental authorisation in terms of Section 26 of the EIA Regulations (2010) on 15 March 2013.
- Approval of the application documentation by MDEDET was received on 17 February 2013 (see **Appendix B**).

5.2 Consultation with Other Relevant Stakeholders

Consultation with other relevant key stakeholders will be undertaken through telephone calls and written correspondence in order to actively engage these stakeholders from the outset and to provide background information about the project during the Environmental Scoping Study. These stakeholders include:

CONTACT PERSON	ORGANISATION
NON-GOVERNMENTAL ORGANISATIONS (NGOs)	
Andrew Rossaak	WESSA: Regional Chairperson
Carolyn Ah Shene-Verdoorn	Birdlife South Africa
Marianna Nieuwoudt	Olifants River Forum
Siziwe Khanyile	groundWork
Rico Euripidou	groundWork
PROVINCIAL GOVERNMENT	
Martha Mokonyane	Department of Mineral Resources
JM van Aswegen	Department of Water Affairs
RMP Monyela	Department of Water Affairs
Florah Mamabolo	Department of Water Affairs (Waterval Forum)
Thamsanqa Xesibe	Department of Water Affairs
Sibongisani Sibiya	Department of Labour
Frans Krige	Mpumalanga Tourism and Parks Agency
Israel Silinda	Department of Agriculture, Rural Development and Land Administration
Tsuke Daniel Hlanyane	Gert Sibande District Municipality
LOCAL MUNICIPALITY	
SS Nkosi	Govan Mbeki Municipality
Sibongile Zikalala	Govan Mbeki Municipality
Willie Coetzee	Govan Mbeki Municipality
LH Mathunyane	Govan Mbeki Municipality: Municipal Manager
Kamesh Rohan	Govan Mbeki Municipality - Technical and Engineering section
Bongani Cedric Malaza	Govan Mbeki Municipality
Albert Olivier	Govan Mbeki Municipality
Nomsa Thabethe	Govan Mbeki Municipality
GOVAN MBEKI LOCAL MUNICIPALITY COUNCILLORS	
Timothy Denny	Secunda: Ward 5
Angela van Royen	Secunda: Ward 21
Naomi Victor	Secunda: Ward 25
Tarnia Baker	Secunda: Ward 30
Philisiwe Nzama	Embalenhle: Ward 4
C Gwiji	Embalenhle: Ward 7
D Mahlangu	Embalenhle: Ward 9
Johana Ndlovu	Embalenhle: Ward 10

CONTACT PERSON	ORGANISATION
A Motaung	Embalenhle: Ward 11
Thabo Tsotetsi	Embalenhle: Ward 8
Nick Mathabe	Embalenhle: Ward 12
T Mtsweni	Embalenhle: Ward 19
Simon Mabena	Embalenhle: Ward 20
OTHER STAKEHOLDERS	
Reveck Hariram	Waterval Forum
Johannes Nkosi	Embalenhle Recreational Environment Club
Geyser Marinda	Chamber of Commerce
Mpho Magasa	None

5.3 Advertising

In compliance with the EIA Regulations (2010), notification of the commencement of the BA process for the project was advertised in English in the two local newspapers, namely the *Echo News* on *16 May 2013* and *Ridge Times* on *22 May 2013* (refer to **Appendix C**). Notifications of the commencement of the BA process for the project were also sent to I&APs via email and posted letters on 14 May 2013.

Interested and affected parties (I&APs) were requested to register their interest in the project and become involved in the EIA process. The primary aim of these advertisements was to ensure that the widest group of I&APs possible was informed and invited to provide input and questions and comments on the project.

In addition to advertisements, A3 size site notices in English, Afrikaans and Zulu were placed at the following public places advertising the EIA process for the project:

- Charlie One - Main gate to Sasol Industrial Complex, Secunda
- Offices of the Govan Mbeki Local Municipality
- Secunda Municipal Library
- Sasol Club

Photos of the site notices placed at the various places are included in **Appendix C**.

5.4 Identification of Interested and Affected Parties

I&APs were identified primarily through an existing database as well as from responses received from the site notices mentioned above. Letters were sent to key stakeholders and other I&APs on the existing database, informing them of the application for the project and indicating how they could become involved in the project. The contact details of all identified I&APs are updated on the project database, which is included in **Appendix C**. This database will be updated on an on-going basis throughout the EIA process.

5.5 Briefing Paper

A briefing paper or Background Information Document (BID) for the project was compiled in English, Afrikaans and Zulu (refer to **Appendix C**). The aim of this document is to provide a brief outline of the application and the nature of the development. It is also aimed at providing preliminary details regarding the BA process, and explains how I&APs could become involved in the project. The briefing paper was distributed to all identified I&APs and stakeholders, together with a registration/comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the project.

5.6 Issues Trail

Issues and concerns raised in the public participation process during the BA process will be compiled into an Issues Trail. This Issues Trail will reflect the issues raised by I&APs during consultation, and will provide an indication of particular areas within which concerns were underscored.

5.7 Public and Authority Review of the Draft Basic Assessment Report

An advert will be placed in the *Ridge Times and Echo News* informing I&APs of the application and the availability of the draft BAR and Environmental Management Programme (EMPr) for review and comment. The *Echo News and Ridge Times* are free weekly community newspapers. The advert will appear in the Echo newspaper on *27 June 2013* and in the *Ridge Times* newspaper on *3 July 2013*. The wording of the advertisements is included in **Appendix C**. Additionally, all registered I&APs were notified of the availability of the report in writing.

The draft BAR, together with the EMPr is being made available for authority and public review for a total of 40 calendar days from ***28 June*** to ***7 August 2013***. In addition, the report will also be made available at the following public locations (which are all readily accessible to I&APs) within the study area:

- Sasol Technology Library
- Secunda Municipal Library
- Embalenhle Municipal Library
- Offices of Royal HaskoningDHV (78 Kalkoen Street, Monument Park, Pretoria)
- Royal HaskoningDHV website (http://www.rhdhv.co.za/pages/services/environmental/current-projects.php)

The draft BAR will also be submitted to MDEDET.

5.8 Final Basic Assessment Report

The final stage in the Basic Assessment process will entail the capturing of responses and comments from I&APs on the draft BAR in order to refine the BAR, and ensure that all issues of significance are addressed. The final BAR will be submitted to MDEDET for review and decision-making. According to Section 56 (6) of the EIA (2010) regulations, registered I&APs must comment on final reports and submit the comments to the competent authority (MDEDET) and provide a copy of such comments to the EAP (RHDHV).

6 GENERAL DESCRIPTION OF THE STUDY AREA

6.1 Geology

Sasol's Secunda plant is underlain by rocks belonging to the Vryheid Formation of the Ecca Group, Karoo Supergroup. These rocks primarily consist of sandstones, shales and coal beds and are extensively intruded by dolerites of Jurassic age. The dolerites occur both as sills and linear dyke structures that may extend over tens of kilometers.

6.2 Topography and Soils

The topography of the greater study area is relatively flat and stable with little agricultural potential. The greater study area falls within the Karoo Supergroup, however the proposed site is highly transformed. The highest point of the site elevation is 1600 m above sea level.

Soils in the proposed area have been disturbed with the historical establishment of the Secunda Complex in the 1970's where the existing soil was replaced with a 1:1 mixture of dolerite and ash. The importation and compaction of fill material has inherently created a near impermeable soil horizon, minimizing the potential for the ingress of contaminants from surface into the underlying subsoil.

6.3 Water Resources

6.3.1 Geohydrology (Groundwater)

The groundwater at the Sasol Complex is characterised by two groundwater aquifers, including a weathered aquifer occurring at a depth of between 8 and 14 m below existing ground level, and a fractured rock aquifer occurring at depths greater than 20 m below existing ground level. The weathered aquifer occurs within the weathered shale, siltstone and mudstones of the Karoo Formation, this aquifer consequently has a low permeability of, on average, 0.005 m/day, whereas the fractured rock aquifer has a very low permeability of, on average, 0.0004 m/day. The low permeability of the weathered and fractures rock aquifer will limit the movement of contaminants within the groundwater system. Groundwater flows in a northerly direction towards the Klipspruit with a relatively low hydraulic gradient of 0.08, based on topographical elevations.

6.3.1.1 Groundwater Quality

Monitoring boreholes located within the complex and to the north of the Klipspruit have indicated the character of the groundwater quality to be dominated by inorganic components, calcium, sodium, nitrate, ammonia, sulphate, iron and manganese.

As could be expected, groundwater quality monitoring boreholes in close proximity of contaminant sources reflect localized elevated contaminant levels. Usually, this occurs at a shallow depth of about 5 m. However, it should be noted that background total dissolved concentrations in boreholes within the greater Secunda area could reflect values up to about 850 mg/l.

It is noted that a 5 km exclusion zone has been established in terms of groundwater abstractive use around the Complex. Consequently, there are no direct users of groundwater within the area of potential influence.

6.3.2 Hydrology (Surface Water)

The Sasol Secunda Industrial and Mining Complex is located in the upper reaches of the Waterval River, affecting the following tributaries of this river:

- Klein and Groot Bossiespruit
- Brandspruit
- Klipspruit
- Trichardspruit

The above streams combine into the Trichardspruit and after the confluence with the Grootspruit, the Trichardspruit joins the Waterval River. The water quality and flow profile of the Waterval River changed substantially from the time Sasol Industrial and Mining Complex was established in the late 1970's. A notable portion of the salinity generated in the Waterval River catchment now originates from the Trichardspruit sub-catchment in which the Sasol Secunda Industrial and Mining Complex is located.

6.3.2.1 Surface Water Quality

Sasol Synfuels monitors the quality of water in the adjacent surface water streams in accordance with the water use license conditions. A review of Sasol Synfuels monitoring data for the Klipspruit (RESM 17) being the upper catchment, RESM 7 being midpoint of the Northern Boundary section of the Klipspruit of the Complex and RESM 6 being at the Charlie 2 Bridge exit of the Northern Boundary section of the Klipspruit, indicates some variability in water quality, principally associated with the seasonality of flow in the Klipspruit, and extended periods of no flow or low flow. The surface water qualities are principally characterised by the presence of inorganics. Elevated salts concentrations have been observed to occur during periods of relatively high flow, suggesting that salts accumulated in the upper catchment are washed into the Klipspruit at such times.

It should be noted that stormwater is not released directly to the Klipspruit from the Complex but routed through the API containment dams and quality checked for compliance before release, treatment or reuse.

RESM 11 and 13 are surface water quality monitoring points on the Bossiespruit, forming the southern boundary of the Sasol Synfuels Complex. RESM 1 is the water use license compliance monitoring point after the convergence of the Bossiespruit and the Klipspruit and prior to the watercourse leaving the Complex boundary.

6.4 Climate and Local Weather Conditions

Local meteorological data was obtained from Sasol which operates a network of monitoring stations in the area. Meteorological data for the period Jan 2011 – Dec 2012 was obtained from the Club and Langverwacht stations. Meteorological parameters recorded at these stations include wind speed, wind direction, temperature, humidity and solar radiation. Given the close proximity of these stations to the plant, data from these stations is considered to be representative of the prevailing meteorological conditions in the area.

6.4.1 Wind

Wind roses comprise of 16 spokes which represent the directions from which winds blew during the period. The colours reflect the different categories of wind speeds. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories.

Based on an evaluation of the meteorological data provided, winds for both stations generally predominate from the north-easterly and north-westerly sectors (**Figure 5**). However, winds at the Club station have a higher frequency of occurrence from the north-westerly sector than observed at the Langverwacht station. In general, moderate to fast winds are recorded at both stations, although faster winds are noted to occur at the Langverwacht station. Calm wind speeds, which are designated as wind speeds less than 0.5 m/s, occur infrequently at both stations.

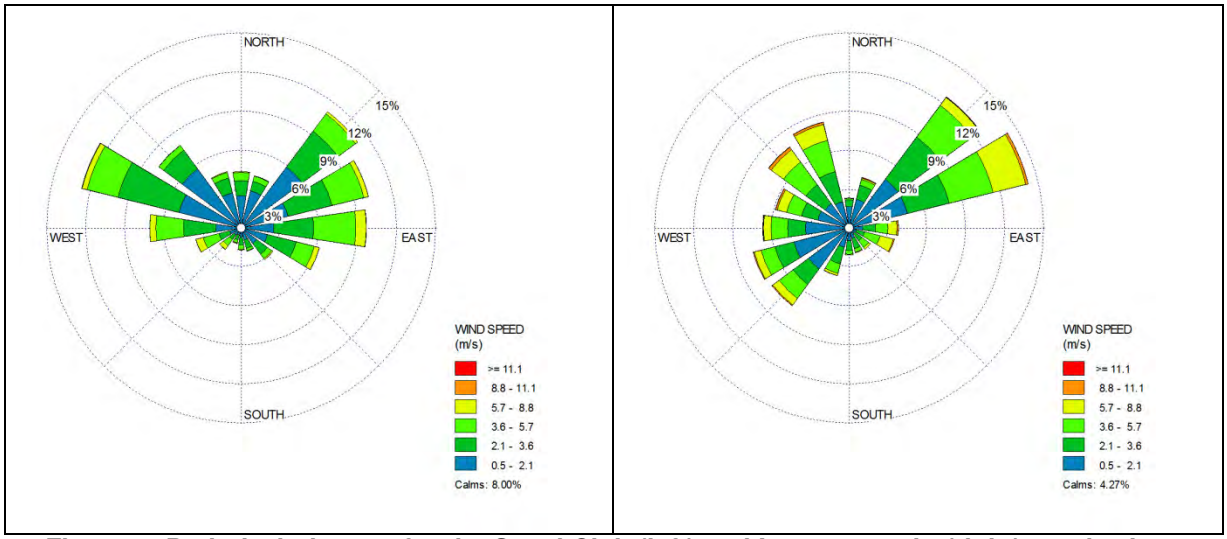

Figure 5: Period wind roses for the Sasol Club (left) and Langverwacht (right) monitoring stations for the period Jan 2011 – Dec 2012

A diurnal trend in the wind field is recorded at both stations (**Figure 6**). At the Club station, winds originate predominantly from the north-east, east-north-east and east during the night–time (18:00 – 06:00). A shift is observed during the day-time (06:00 – 18:00), with a higher frequency of winds originating from the west-north-west over this period. At the Langverwacht station, winds originate predominantly from the east-north-east and north-east during the night-time (**Figure 6**). During the day-time, winds occur with a higher frequency of occurrence from the westerly and northerly sectors. As would be expected, faster winds are recorded during the day-time period compared to the night-time at both stations.

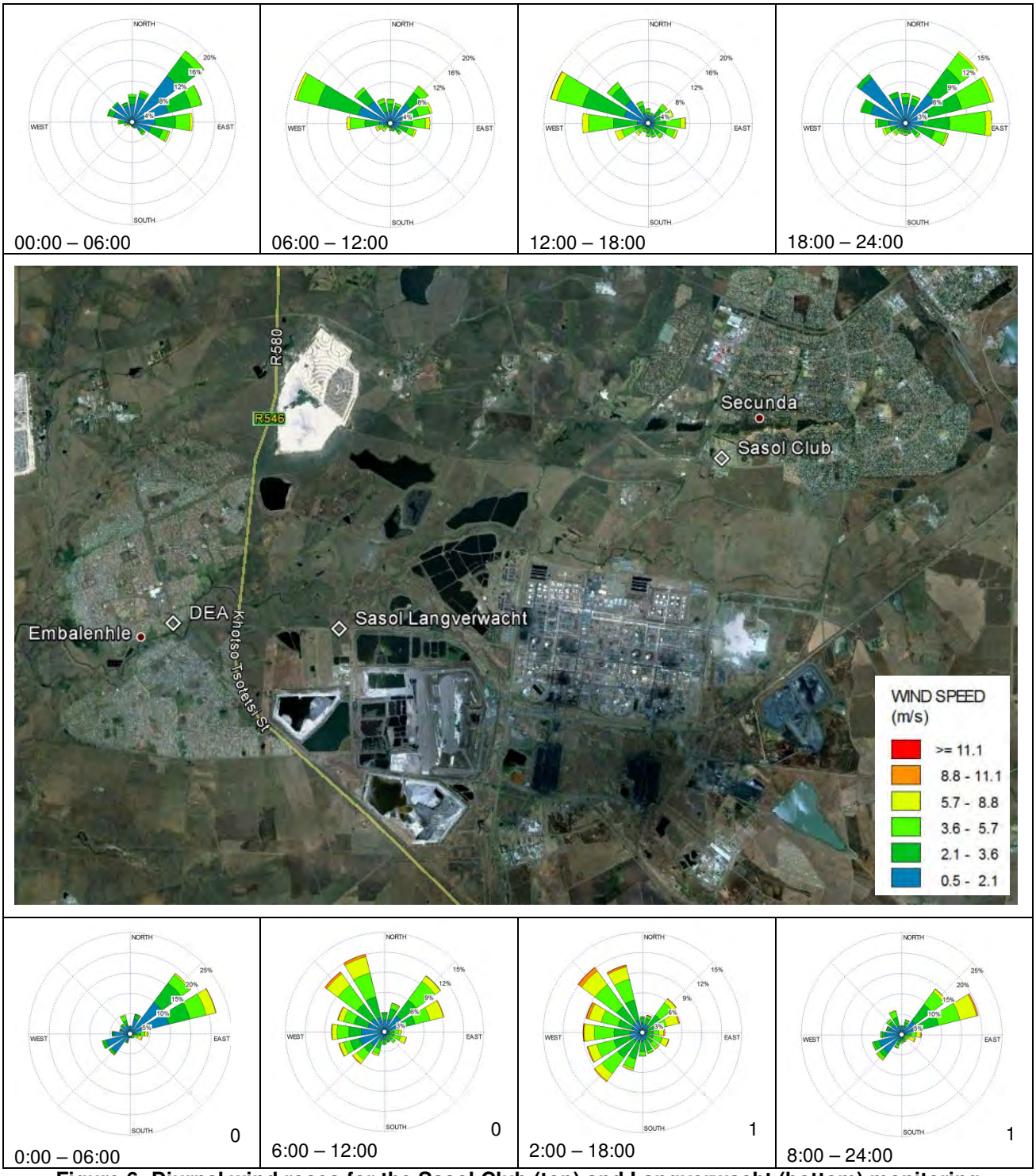

Figure 6: Diurnal wind roses for the Sasol Club (top) and Langverwacht (bottom) monitoring stations for the period Jan 2011 – Dec 2012

The seasonal variability in the wind field at both stations is shown in **Figure 7**.

A similar wind field is recorded at the Club station during all seasons, with winds originating predominantly from the westerly and easterly sectors. Winds occur with a higher frequency of occurrence from the easterly sector during the spring (September, October and November) and summer months (December, January and February). At the Langverwacht station, winds originate predominantly from the north-east, south-west during the spring and summer months. During autumn and winter, a different wind field is observed with additional components recorded from the north-east and north-west during these seasons.

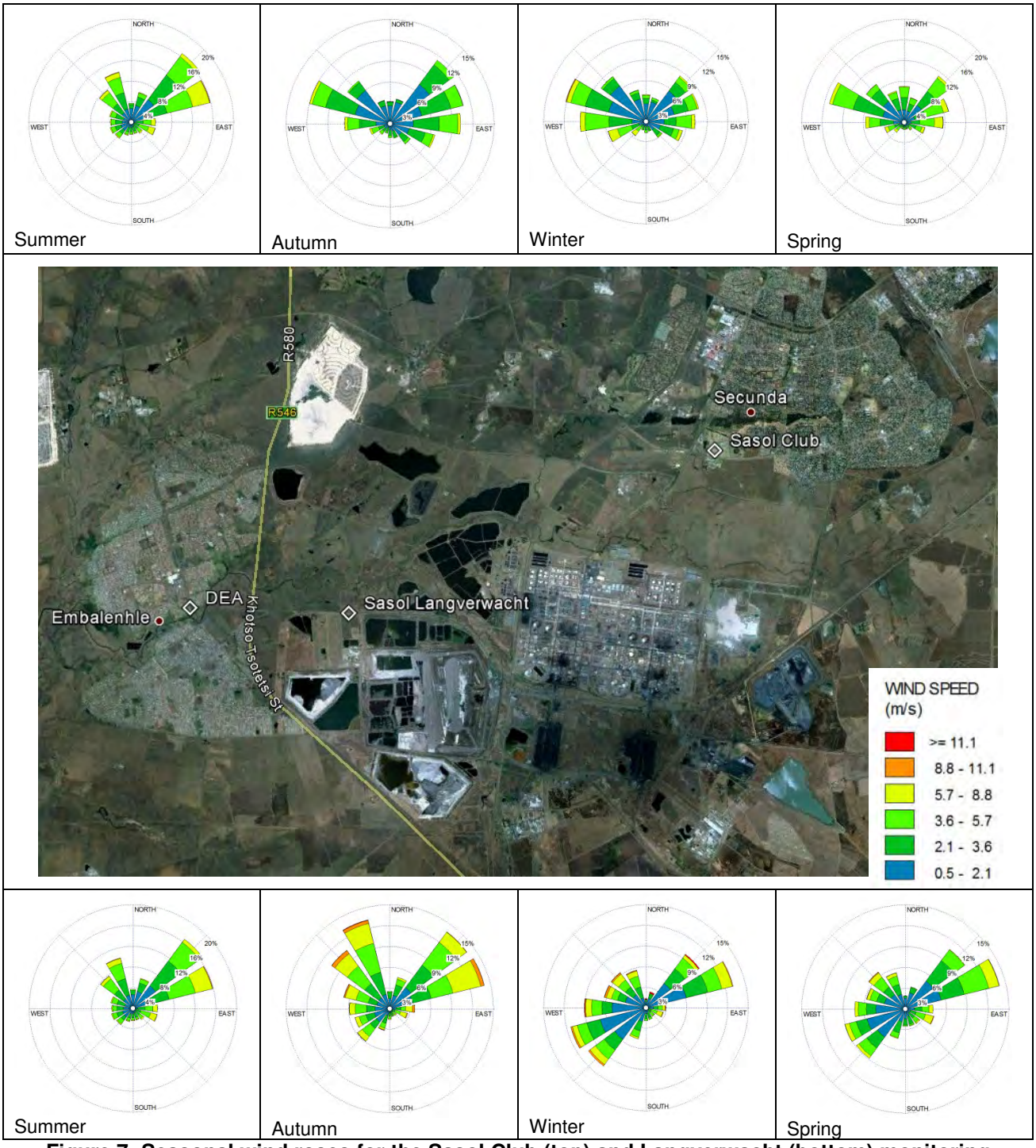

Figure 7: Seasonal wind roses for the Sasol Club (top) and Langverwacht (bottom) monitoring stations for the period Jan 2011 – Dec 2012

6.4.2 Atmospheric Stability

The tendency of the atmosphere to resist or enhance vertical motion and thus turbulence is termed atmospheric stability. Stability is related to both the change of temperature with height and wind speed. A neutral atmosphere neither enhances nor inhibits mechanical turbulence. An unstable atmosphere enhances turbulence, whereas a stable atmosphere inhibits mechanical turbulence. The turbulence of the atmosphere is the most important parameter affecting dilution of air pollution as the more unstable the atmosphere, the greater the dilution of air pollution.

Atmospheric stability is commonly categorised into six stability classes (**Table 6**). The atmospheric boundary layer is usually unstable during the day due to turbulence caused by the sun's heating effect on the earth's surface. The depth of this mixing layer depends mainly on the amount of solar radiation, increasing in size gradually from sunrise to reach a maximum at about 5 - 6 hours after sunrise. The degree of thermal turbulence is increased on clear warm days with light winds. During the night-time a stable layer, with limited vertical mixing, exists. During windy and/or cloudy conditions, the atmosphere is normally neutral.

Table 6: Atmospheric stability classes

A	Very unstable	calm wind, clear skies, hot daytime conditions
B	Moderately unstable	clear skies, daytime conditions
C	Unstable	moderate wind, slightly overcast daytime conditions
D	Neutral	high winds or cloudy days and nights
E	Stable	moderate wind, slightly overcast night-time conditions
F	Very stable	low winds, clear skies, cold night-time conditions
G	Most stable	Associated with worst case dispersion conditions

In general, the site experiences the worst case scenario stability class (Class G) see **Figure 8**. This is expected given the predominance of a high-pressure anticyclone over South Africa which produces stable, clear conditions.

Figure 8: Stability class frequency distribution for Sasol Club (top) and Langverwacht (bottom) stations

6.4.3 Temperature and Humidity

Temperature affects the formation, action, and interactions of pollutants in various ways[1]. Chemical reaction rates tend to increase with temperature and the warmer the air, the more water it can hold and hence the higher the humidity. When relative humidity exceeds 70%, light scattering by suspended particles begins to increase, as a function of increased water uptake by the particles[2]. This results in decreased visibility due to the resultant haze. Many pollutants may also dissolve in water to form acids. Temperature also provides an indication of the rate of development and dissipation of the mixing layer.

Average monthly temperature and humidity at both stations for the period Jan 2008 – Dec 2012 are given in **Figure 9** and **Figure 10**. Daily average summer temperatures range between ~18℃ and ~19 ℃ while winter temperatures range between ~7 ℃ and ~12 ℃. Relative humidity is lowest during autumn and winter and highest in summer and spring.

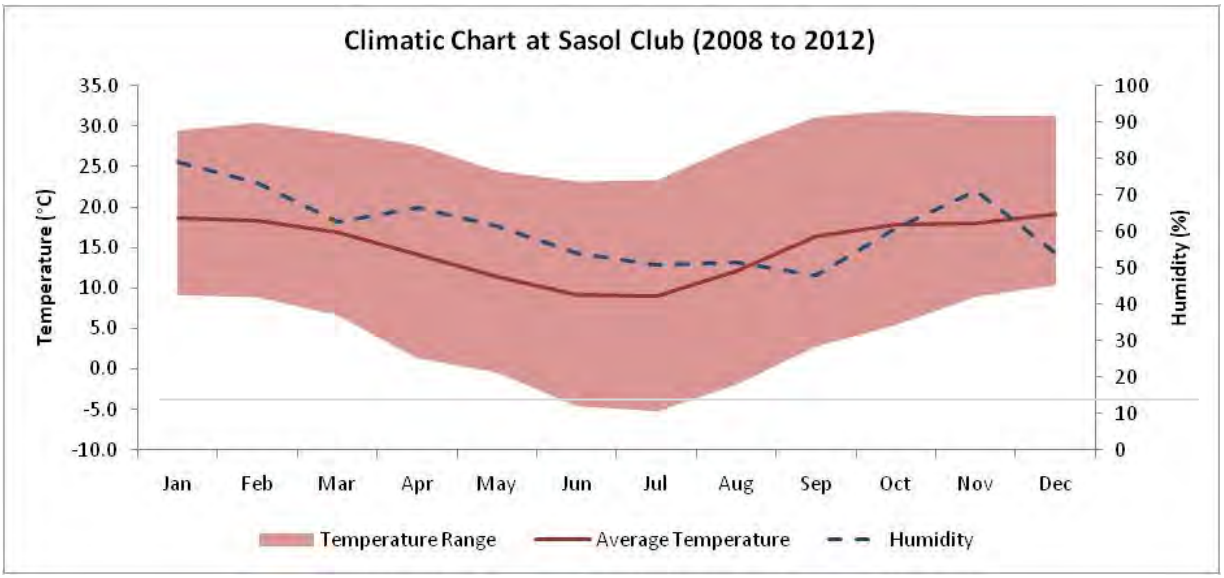

Figure 9: Average monthly temperature and humidity for Sasol Club for the period Jan 2008 – Dec 2012

[1] **Kupchella, C.E. and M.C. Hyland, 1993**. Environmental Science. Living Within the System of Nature. Prentice Hall, New Jersey.

[2] **CEPA/FPAC Working Group, 1999**. National Ambient Air Quality Objectives for Particulate Matter. Part 1: Science Assessment Document. Minister, Public Works and Government Services, Ontario. Available at URL: http://www.hc-sc.gc.ca/bch.

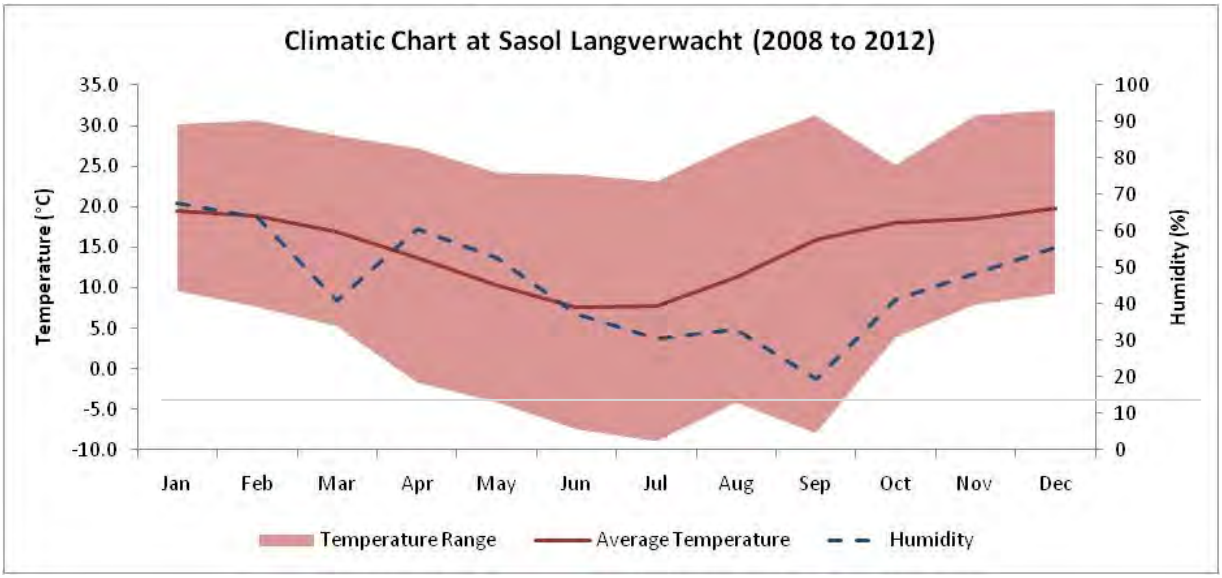

Figure 10: Average monthly temperature and humidity for Langverwacht for the period Jan 2008 – Dec 2012

6.4.4 Precipitation

The area under investigation lies in the summer rainfall region of South Africa, receiving a total annual rainfall of 418 mm for the Club site during 2006 and 603.6 mm for the Langverwacht site during the same period.

6.5 Air Quality

On 23 November 2007, the Highveld was declared a priority area, referred to as the Highveld Priority Area, in terms of section 18(1) of the National Environmental Management: Air Quality Act, 2004 (Act No 39 of 2004). This implies that the ambient air quality within the Highveld Priority Area exceeds or may exceed ambient air quality standards, alternatively, that a situation exists within the Highveld Priority Area, which is causing or may cause a significant negative impact on air quality in the area, and that the area requires specific air quality management action to rectify the situation. The area declared as such, includes *inter alia* the local municipalities of Govan Mbeki, Dipaleseng, Lekwa, Msukaligwa, and Pixley ka Seme. Hence, five of the seven local municipalities constituting the District form part of the Highveld Priority Area.

6.6 Noise

The Sasol Synfuels Complex is a source of existing noise as a result of current industrial processes that are taking place. The noise at the Complex is within 85 dBA.

6.7 Social

The proposed project falls within the Govan Mbeki Local Municipality (GMLM) which is located in the north west of the Gert Sibande District Municipality (GSDM). The GMLM has the most diversified economy within the GSDM, dominated by the petrochemical industry (Sasol II and III complexes) and coal and gold mining. Secunda and Embalenhle are the closest town / communities to the study area.

The study area extends potentially across much of the Govan Mbeki Municipality, which consists of Secunda, Embalenhle, Kinross, Evander, Trichardt, Charl Cilliers, Leslie / Leandra, Lebohang, Eendracht, Bethal and eMzinoni. The Govan Mbeki Local Municipality has the largest number (53.8% or 99201 people)[3] and highest level of employment within the District. This could be attributed to the

[3] **Gert Sibande District Municipality, 2009.** Spatial Development Framework.

fact that the GMLM is one of two local municipalities that hosts the majority of all the mining, manufacturing and agricultural activity taking place within the District.

6.8 Land-use

The Sasol Synfuels Industrial Complex is surrounded by a number of different land uses i.e. industrial, residential, commercial and agricultural. The middle to high-income residential area of Secunda is located approximately 5 km north-east of the Complex and includes a variety of commercial activities. In turn, the low cost housing development of Embalenhle is located 10 km north-west of the site. Due to the highly industrialised nature of the area there is extensive infrastructural development including an extensive road and rail network.

6.9 Health and Safety

The nature of Sasol's business brings with it substantial inherent safety, health and environmental (SH&E) risks. The group's annual sustainable development reporting includes a comprehensive list of these potential risks, the most substantial of which are:

- the risk of fire or explosion at sites that host inventories of flammable hydrocarbons above ground;
- risks associated with extensive underground coal operations; and
- toxicity risks associated with the wide range of hazardous chemicals that are produced.

Sasol's Safety and Health Minimum Requirements are compulsory and applicable to all new projects such as the proposed C3 expansion project.

6.10 Heritage

The Sasol Synfuels Complex is a highly developed Industrial area that has been in operation for more than 50 years, the landscape has been changed by the development. None of the structures have aesthetic, historic, research or historical significance. There are no sites of archaeological or cultural significance known on the proposed study area.

Sasol will ensure that all requirements of Chapter II, Section 38 of the National Heritage Resources Act, Act 25 of 1999, are complied with in the BA process and that the comments and/or recommendations of the relevant heritage resources authority responsible for the area in which the development is proposed, are considered.

7 IMPACT ASSESSMENT METHODOLOGY

The potential environmental impacts associated with the project will be evaluated according to it nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- ***Nature***: A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- ***Extent***: The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- ***Duration***: Indicates what the lifetime of the impact will be;
- ***Intensity***: Describes whether an impact is destructive or benign;
- ***Probability***: Describes the likelihood of an impact actually occurring; and
- ***Cumulative***: In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

Table 7: Criteria to be used for the rating of impacts

CRITERIA	DESCRIPTION			
EXTENT	**National (4)** The whole of South Africa	**Regional (3)** Provincial and parts of neighbouring provinces	**Local (2)** Within a radius of 2 km of the construction site	**Site (1)** Within the construction site
DURATION	**Permanent (4)** Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	**Long-term (3)** The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	**Medium-term (2)** The impact will last for the period of the construction phase, where after it will be entirely negated	**Short-term (1)** The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
INTENSITY	**Very High (4)** Natural, cultural and social functions and processes are altered to extent that they permanently cease	**High (3)** Natural, cultural and social functions and processes are altered to extent that they temporarily cease	**Moderate (2)** Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	**Low (1)** Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
PROBABILTY OF OCCURENCE	**Definite (4)** Impact will certainly occur	**Highly Probable (3)** Most likely that the impact will occur	**Possible (2)** The impact may occur	**Improbable (1)** Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Table 8: Significance rating of classified impacts

Low impact (4 - 6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 - 9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 - 12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (13 - 16 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary will be included in an EMPr which will form part of the Basic Assessment Report.

8 IMPACTS ASSESSMENT AND MANAGEMENT MEASURES

This section aims to identify the potential positive and negative impacts (both biophysical and social) associated with the proposed C3 expansion project. The following potential environmental impacts have been considered for the proposed project:

8.1 Construction Phase

8.1.1 Upgrade of the Existing PP1 and PP2 Plants

The upgrade of the existing polypropylene plants will chiefly entail the retrofitting of various parts of equipment in the established plants. These include, but are not limited to:

a) Installation of a catalyst feeding system.
b) Upgrade of the powder conveying coolers.
c) Upgrade of the extruders pelletizing units to new hydraulic docking pelletizers for improved equipment availability.
d) Modification of the bagging equipment to ensure availability as needed. It should be noted that this modification will not increase the capacity.
e) Installation of a third catalyst pump for use as a standby or as a full spare.
f) Upgrade of the co-catalyst feed pumps to allow for the future higher capacities.
g) Upgrade of quench pumps and quench nozzles on the first and second reactors.
h) Upgrade of the reactor overhead condenser.
i) Installation of larger spool pieces below the blowcase system. Additionally, the blowcase lining will be removed and a purge ring will be installed inside the blowcase.
j) Upgrade of the pellet classifier.

It should please be noted that the above retrofitting of various equipment might slightly differ in the actual implementation phase. Nonetheless it will still be undertaken in the existing plant and no additional authorization will be required.

Table 9: Potential impacts relating to the upgrade of PP1 and PP2 plants

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Geohydrology (groundwater) and Hydrology (surface water): • Contamination of surface and groundwater due to spillage, leakage, incorrect storage and handling of chemicals; oils; lubricants, and other hazardous materials.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Possible (-2) **Significance: Medium (-7)**	• All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report. • Provide proper warning signage to make people aware of the activities within designated areas. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • Employees should be provided with absorbent spill kits and disposal containers to handle spillages. • Employees should record and report any spillages to the responsible person. • An Emergency Preparedness and Response Plan will be developed and implemented should an incident occur. • Access to storage areas on site must be restricted to authorised employees only. • All incidents must be reported to the responsible site officer as soon as it occurs. • Existing stormwater management structures (channels, bunded areas, sumps) will be utilised. However, these should be inspected to ensure they are in proper working condition so as to trap any potentially contaminated stormwater and return it to the relevant	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		process or allow it to be stored and properly disposed off.	
Noise: During the upgrade, noise pollution may occur. The following possible sources of noise could potentially generate noise pollution during construction: • Operation of machinery. • Drilling.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Highly Probable (-3) **Significance: Medium (-8)**	• All equipment used come with inbuilt standard silencers. Maintain vehicles and equipment in good working order. • Construction staff working in area where the 8-hour ambient noise levels exceed 85 dBA must have the appropriate Personal Protective Equipment (PPE).	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**
Waste: Waste generated will have a negative impact on the environment, if not managed correctly. Waste on site includes domestic waste, spent grinding material, redundant equipment; paint cans and brushes, insulation material etc.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Possible (-2) **Significance: Medium (-7)**	• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • General waste disposal bins will be made available for employees to use throughout the upgrade phase. • General waste will be disposed of at Sasol's approved waste disposal facility. • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Hazardous materials will be generated if there are spillages. This waste should be cleaned up using absorbent material provided in spill kits on site. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated. • Provide employees with appropriate PPE for	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		handling hazardous materials. • All hazardous waste will be disposed of in a registered hazardous waste disposal facility.	
Employment: The upgrade of the PP plants requires specialized skills and thus no significant new employment opportunities may be created as a specialist contractor will be appointed.	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**	• All labour (skilled and unskilled) and contractors should be sourced locally where possible.	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**
Safety: Staff safety during upgrade of the PP plants.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during the upgrade. • All construction staff must have the appropriate PPE. • The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. • Report and record any environmental, health and safety incidents to the responsible person.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

8.1.2 Construction of a New PP Plant

TABLE 10: POTENTIAL IMPACTS RELATING TO THE CONSTRUCTION OF A NEW PP PLANT

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Topography and Soils: • Soil exchange and historical contamination. • Alteration of topography due to stockpiling of soil, building material, debris and waste material on site. • Potential erosion, degradation and loss of topsoil due to construction activities as well as surface and stormwater runoff.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Definite (-4) **Significance: Medium (-9)**	• A geotechnical and topographical study will need to be conducted on the selected site in the next phase of the project if this option is chosen. • All site disturbances must be limited to the areas where structures will be constructed. • Consider using any excess rocks and boulders that are excavated from the construction site for any erosion protection work which is required on site. • Excess material as a result of excavation activities together with construction rubble must be removed, once construction is completed and appropriately disposed of. • Suitable excavated material is to be stockpiled next to excavations for use as backfill and all unsuitable or excess material must be loaded onto trucks and hauled to designated areas. • Backfill material must be from excavated material or dolerite/ash obtained from a licensed source. • Areas to be backfilled must be cleared of all unsuitable material and debris. • Topsoil should only be exposed for minimal periods of time and adequately stockpiled to prevent loss and runoff. • Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Highly Probable (-3) **Significance: Medium (-7)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		• Soils excavated must be tested and if it is established that there is contamination, the soils should be treated at onsite facilities or disposed of properly by a reputable waste management company. • All stockpiles must be restricted to designated areas. • Land disturbance must be minimised in order to prevent erosion and run-off – this includes leaving exposed soils open for a prolonged period of time. • Areas susceptible to erosion must be protected by installing the necessary temporary and/or permanent drainage works as possible to prevent surface water from being concentrated in streams. • Any tunnels or erosion channels developed during the construction period shall be backfilled and compacted, and the area restored to a proper condition.	
Geohydrology (groundwater) and Hydrology (surface water): Contamination of surface and groundwater due to spillage, leakage, incorrect storage and handling of chemicals; oils; lubricants, cement, fuels and other hazardous materials.	**Extent:** Local (-2) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: High (-10)**	• All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report. • Provide proper warning signage to make people aware of the activities within designated areas. • Employees should be provided with	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		absorbent spill kits and disposal containers to handle spillages. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • All earth moving vehicles and equipment must be regularly maintained to ensure they are in proper working condition. No repairs may be undertaken beyond the contractor lay-down area. • Employees should record and report any spillages to the responsible person. • An Emergency Preparedness and Response Plan will be developed and implemented should an incident occur. • Access to storage areas on site must be restricted to authorised employees only. • Ensure the establishment of stormwater diversion berms around the contractor laydown area and other potential contaminated areas (e.g. diesel storage tanks or refuelling station). • All contaminated standing water should be immediately removed and treated or disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as they occur. • Wastewater should be directed into proper stormwater drains. • Temporary toilets must be provided for the construction staff and should be emptied regularly at a licensed treatment site. • Sewage water should not be channelled	

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		through stormwater drains or be allowed to flow freely or stagnate on the soil surface. • Stormwater management structures (channels, bunded areas, sumps) should be designed into the project to trap any potentially contaminated stormwater and allow it to be stored and properly disposed off. • Excess or spilled concrete should be confined within the works area and then removed to a waste site.	
Biodiversity (fauna and flora)	**Extent:** Site (-1) **Duration:** Short-term (-1) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-4)**	• No mitigation measures proposed as the site is highly transformed with existing infrastructure. Impact on biodiversity is therefore not significant.	
Air Quality: The following activities have been identified as possible sources of fugitive dust during construction operations at the site: • Dust from bare areas cleared for construction. • Debris handling. • Emissions from construction machinery and equipment. • Trucks transporting spoil and fill material.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• There should be strict speed limits on site roads to prevent the liberation of dust into the atmosphere. • Dust must be suppressed on the construction site, temporary dirt roads and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. • All site workers during construction will need to wear the appropriate PPE to avoid excessive exposure to dust particles.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**
Noise: During the construction phase there is likely to be an increase in noise pollution.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3)	• Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order. • Construction staff working in areas where	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1)

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
The following possible sources of noise could potentially generate noise pollution during construction: • Construction activities (excavating and site clearing). • Construction vehicles and construction staff. • Operation of pumps at the site. • Blasting and / or drilling.	**Probability:** Highly Probable (-3) **Significance: Medium (-9)**	the 8-hour ambient noise levels exceed 85 dBA must have the appropriate Personal Protective Equipment (PPE).	**Probability:** Possible (-2) **Significance: Low (-6)**
Waste: Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste on site includes domestic waste, spent grinding material, mixed concrete, paint cans and brushes, insulation material, building rubble and other construction waste.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Highly Probable (-3) **Significance: Medium (-8)**	• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • General waste disposal bins will be made available for employees to use throughout the construction phase. • Where possible construction waste on site should be recycled or reused. • Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately. • General waste will be disposed of at an approved waste disposal facility. • Records of all waste being taken off site must be recorded and kept as evidence. • Evidence of correct disposal must be kept. • Building rubble will be used, where possible, in construction. Where this is not possible, the rubble will be disposed of at an appropriate site. • Burning of waste material will not be	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		permitted. • Hazardous materials will be generated if there are spillages during construction and maintenance periods. This waste should be cleaned up using absorbent material provided in spill kits on site. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated. • Provide employees with appropriate PPE for handling hazardous materials. • All hazardous waste will be disposed off in a registered hazardous waste disposal facility. • Ablution facilities in the form of mobile chemical toilets must be provided on site and construction workers must not under any circumstances relieve themselves elsewhere. • Chemical toilets must be cleaned and emptied regularly by a registered service provider.	
Employment: Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed contractor would be required to make use of local workers (e.g. for loading building materials and the digging of foundations etc).	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**	• All labour (skilled and unskilled) and contractors should be sourced locally where possible. • Recruitment at the construction site will not be allowed.	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Safety: Activities on site that could pose a safety risk include: • Movement of construction vehicles. • Operation of equipment and machines.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. • All construction staff must wear the appropriate PPE. • The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. • Report and record any environmental, health and safety incidents to the responsible person.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

Table 11: Summary of impacts and average points during the construction phase

IMPACTS	Upgrade of the PP Plants - Without Mitigation	Upgrade of the PP Plants – With Mitigation	Construction of a New PP Plant - Without Mitigation	Construction of a New PP Plant - With Mitigation
Topography and Soils	-	-	-9	-7
Water Resources	-7	-5	-10	-6
Biodiversity	-	-	-4	-
Air Quality	-	-	-9	-5
Noise	-8	-6	-9	-6
Waste	-7	-5	-8	-6
Employment	+6*	+6*	+6*	+6*
Safety	-9	-6	-9	-6
Average Total	**-7.75**	**-5.50**	**-8.29**	**-6.00**

*Not used in the calculation.

8.2 Operational Phase

8.2.1 Upgrade of the Existing PP1 and PP2 Plants

Table 12: Potential operational phase impacts – Upgrade of the PP1 and PP2 plants

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Safety during operation and maintenance As described earlier on, the inherent properties of propylene including it being a volatile and highly flammable gas. The properties of propylene on its own and conditions, which may occur, could pose a hazard to personnel and adjacent plants in case of loss of containment scenarios while en route from the propylene storage bullets to the PP plants These hazards may result in injuries or fatalities to personnel, damage to equipment and property in case of an explosion or fire.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Moderate (-2) **Probability:** Possible (-2) **Significance: Medium (-8)**	• All personnel must be well trained to work in the PP plants. • Strict access rules should be applied to personnel entering the PP plants. • All personnel working in the PP plants must be provided with the appropriate PPE equipment. • Appropriate signage e.g. no smoking should be clearly displayed in the PP plant. • The PP plants should be regularly maintained as required to ensure that all the fittings and equipment are in good working condition.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-6)**
Noise: Noise at the PP plants will mainly be produced from the operation of the equipment (e.g. compressors, pumps etc).	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Moderate (-2) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Personnel working in the PP plants must have the appropriate Personal Protective Equipment (PPE) since ambient noise levels usually exceed 85 dBA.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Medium (-7)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Waste generation: Waste generated during the operational phase will include: • Oils from the flushing and draining of equipment e.g. pipes. • Redundant equipment including blowcase linings, pumps etc. • Wastewater generated from the cleaning of equipment.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Medium (-7)**	• Hazardous waste must be stored in a covered, well labelled, ventilated area which is also bunded. • All hazardous waste must be disposed of at a registered hazardous waste disposal site. • Evidence of correct disposal of waste must be retained.	**Extent:** Site (-1) **Duration:** Short-term (-1) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-5)**
Air Quality: The use of propylene in the PP plants to produce polypropylene ensures that no propylene is flared as a result of it being considered waste. Subsequently, the implementation of this project will ensure that the air quality does not deteriorate.	**Extent:** Site (+1) **Duration:** Long-term (+3) **Intensity:** Low (+1) **Probability:** Definite (+4) **Significance: Medium (+9)**	None.	
Cumulative Impact			
Air Quality: The use of propylene in the PP plants to produce polypropylene ensures that no additional propylene is flared due to the increased propylene volumes. Cumulatively this may result	**Extent:** Local (+2) **Duration:** Long-term (+3) **Intensity:** Low (+1) **Probability:** Highly Probably (+3) **Significance: Medium (+9)**		

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
in a positive impact on the air quality. Propylene is flared from the current facility in cases of emergency and upset conditions.			

8.2.2 Construction of a New PP Plant

Table 12: Potential operational phase impacts - construction of a new pp plant

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Safety during operation and maintenance As described earlier on, the inherent properties of propylene including it being a volatile and highly flammable gas. The properties of propylene on its own and conditions, which may occur, could pose a hazard to personnel and adjacent plants in case of loss of containment scenarios while en route from the storage bullets to the PP plants. These hazards may result in injuries or fatalities to personnel, damage to equipment and property in case of an explosion or fire.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Moderate (-2) **Probability:** Possible (-2) **Significance: Medium (-8)**	• All personnel must be well trained to work in the PP plants. • Strict access rules should be applied to personnel entering the PP plants. • All personnel working in the PP plants must be provided with the appropriate PPE equipment. • Appropriate signage e.g. no smoking should be clearly displayed in the PP plant. • The PP plants should be regularly maintained as required to ensure that all the fittings and equipment are in good working condition.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-6)**
Noise: Noise at the PP plants will mainly be produced from the operation of the equipment.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Moderate (-2) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Personnel working in the PP plants must have the appropriate Personal Protective Equipment (PPE) since ambient noise levels usually exceed 85dBA.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Medium (-7)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Waste generation: Waste generated during the operational phase will include: • Oils from the flushing and draining of equipment e.g. pipes. • Redundant equipment. • Wastewater generated from the cleaning of equipment.	**Extent:** Site (-1) **Duration:** Long-term (-3) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Medium (-7)**	• Hazardous waste must be stored in a covered, well labelled, ventilated area which is also bunded. • All hazardous waste must be disposed off in a registered hazardous waste disposal site. • Evidence of correct disposal of waste must be retained.	**Extent:** Site (-1) **Duration:** Short-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**
Air Quality: The use of propylene in the PP plants to produce polypropylene ensures that no propylene is flared as a result of it being considered waste. Subsequently, the implementation of this project will ensure that the air quality does not deteriorate.	**Extent:** Site (+1) **Duration:** Long-term (+3) **Intensity:** Low (+1) **Probability:** Definite (+4) **Significance: Medium (+9)**	None.	
Cumulative Impacts			
Air Quality: The use of propylene in the PP plants to produce polypropylene ensures that no additional propylene is flared due to the increased propylene volumes. Cumulatively this may result in a positive impact on the	**Extent:** Local (+2) **Duration:** Long-term (+3) **Intensity:** Low (+1) **Probability:** Highly Probably (+3) **Significance: Medium (+9)**	None.	

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
air quality. Propylene is flared from the current facility in cases of emergency and upset conditions.			

Table 13: Summary of impacts and average points allocated – operational phase

IMPACTS	Upgrade of the PP Plants - Without Mitigation	Upgrade of the PP Plants – With Mitigation	Construction of a New PP Plant - Without Mitigation	Construction of a New PP Plant - With Mitigation
Safety	-8	-6	-8	-6
Noise	-9	-7	-9	-7
Waste Generation	-7	-5	-7	-5
Air Quality	+9*	-	-	-
Cumulative Air Quality	+9*	-	+19*	-
Average Total	**-8**	**-6.00**	**-8**	**-6.00**

* Not included as part of the calculation

8.3 Decommissioning Phase

At this point of the project planning process, the necessity for and timing of decommissioning of the proposed project is not known. If decommissioning of the PP plants does occur, it will be undertaken together with the entire Sasol Industrial complex's operations. During decommissioning, all appropriate legal procedures will be followed e.g. giving notice to the relevant authorities. Furthermore, an application in terms of Listing Notice 1 of the EIA Regulations (2010) for the relevant Environmental Authorisation will be lodged if applicable.

However, like construction impacts, de-commissioning impacts are inherently temporary in duration.

Table 14: Potential decommissioning phase impacts related to the project

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Geohydrology (groundwater) and Hydrology (surface water): Contamination of surface and groundwater due to spillage, leakage, incorrect storage and handling of chemicals; oils; lubricants, cement, fuels and other hazardous materials.	**Extent:** Local (-2) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: High (-10)**	• All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report. • Provide proper warning signage to make people aware of the activities within designated areas. • Employees should be provided with absorbent spill kits and disposal containers to handle spillages. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • All equipment must be regularly maintained to ensure they are in proper working condition. No repairs may be undertaken beyond the contractor lay-down area. • Employees should record and report any spillages to the responsible person.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		• An Emergency Preparedness and Response Plan will be developed and implemented should an incident occur. • Access to storage areas on site must be restricted to authorised employees only. • Ensure the establishment of stormwater diversion berms around the contractor laydown area and other potential contaminated areas (e.g. diesel storage tanks or refuelling station). • All incidents must be reported to the responsible site officer as soon as they occur. • Care must be taken to ensure that no water from the deconstruction site enters the natural watercourse. • Wastewater should be directed into proper stormwater drains. • Temporary toilets must be provided for the construction staff and should be emptied regularly at a licensed treatment site. • Sewage water should not be channelled through stormwater drains or be allowed to flow freely or stagnate on the soil surface.	
Soil Erosion: All areas disturbed during deconstruction are to be re-vegetated to avoid erosion.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Possible (-2) **Significance: Medium (-7)**	• Areas where topsoil was removed should be landscaped in order to reflect surrounding conditions. • Erosion monitoring and control should be conducted. This should be in the form of inspections subsequent to rains. Topsoil should be replaced in all areas that were eroded. It is critical that adequate topsoil remains.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
Air Quality: The following activities have been identified as possible sources of fugitive dust during deconstruction operations at the site: • Debris handling. • Emissions from construction machinery and equipment.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• There should be strict speed limits on site roads to prevent the liberation of dust into the atmosphere. • Dust must be suppressed on the construction site, temporary dirt roads and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. • All site workers during deconstruction will need to wear the appropriate PPE to avoid excessive exposure to dust particles.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Improbable (-1) **Significance: Low (-5)**
Noise: During the decommissioning phase there is likely to be an increase in noise pollution. The following possible sources of noise could potentially generate noise pollution during deconstruction: • Vehicles and staff. • Drilling.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order. • Staff working in areas where the 8-hour ambient noise levels exceed 85 dBA must have the appropriate Personal Protective Equipment (PPE).	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**
Waste: Waste generated will have a negative impact on the environment, if not controlled adequately. Waste on site includes general and hazardous waste.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Moderate (-2) **Probability:** Highly Probable (-3) **Significance: Medium (-8)**	• The Contractor must familiarise themselves with the definitions of waste and the handling, storage and transport of waste as prescribed in the applicable environmental legislation. • General waste disposal bins will be made available for employees to use throughout the construction phase. • Waste will be temporarily stored on site (less than 90 days) before being disposed off appropriately.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
		• General waste will be disposed of at an approved waste disposal facility. • Records of all waste being taken off site must be recorded and kept as evidence. • Evidence of correct disposal must be kept. • Burning of waste material will not be permitted. • Hazardous materials will be generated if there are spillages. This waste should be cleaned up using absorbent material provided in spill kits on site. • Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin. • The storage area for hazardous material must be concreted, bunded, covered, labelled and well ventilated. • Provide employees with appropriate PPE for handling hazardous materials. • All hazardous waste will be disposed off in a registered hazardous waste disposal facility. • Ablution facilities in the form of mobile chemical toilets must be provided on site and staff must not under any circumstances relieve themselves elsewhere. • Chemical toilets must be cleaned and emptied regularly by a registered service provider.	
Safety: Activities on site that could pose a safety risk include: • Movement of vehicles. • Operation of equipment and machines.	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** High (-3) **Probability:** Highly Probable (-3) **Significance: Medium (-9)**	• Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. • All staff must have the appropriate PPE. • Staff handling chemicals or hazardous materials must be trained in the use of the	**Extent:** Site (-1) **Duration:** Medium-term (-2) **Intensity:** Low (-1) **Probability:** Possible (-2) **Significance: Low (-6)**

POTENTIAL IMPACTS	SIGNIFICANCE RATING OF IMPACTS	PROPOSED MITIGATION	SIGNIFICANCE RATING OF IMPACTS AFTER MITIGATION:
• Deconstruction activities.		substances and the environmental, health and safety consequences of incidents. • Report and record any environmental, health and safety incidents to the responsible person.	
Employment: Limited opportunities do, however, exist for manual labour for unskilled tasks, where the appointed contractor would be required to make use of local workers (e.g. for loading of materials).	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**	• All labour (skilled and unskilled) and contractors should be sourced locally where possible. • Recruitment at the deconstruction site will not be allowed.	**Extent:** Local (+2) **Duration:** Short-term (+1) **Intensity:** Low (+1) **Probability:** Possible (+2) **Significance: Low (+6)**

Table 15: Summary of impacts and average - decommissioning phase

IMPACTS	Without Mitigation	With Mitigation
Water Resources	-10	-6
Soil Erosion	-7	-5
Air Quality	-9	-5
Noise	-9	-6
Waste	-8	-6
Safety	-9	-6
Employment	+6*	+6*
Average Total	**-8.67**	**-5.67**

* Not included as part of the calculation

9 ENVIRONMENTAL IMPACT STATEMENT

This Basic Assessment (BA) study for the proposed C3 expansion project has been undertaken in accordance with the Environmental Impact Assessment Regulations (2010) published in Government Notices R. 543 of 18 June 2010 read with Section 44, of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

This BA study provides an assessment of both the benefits and potential negative impacts anticipated as a result of the C3 expansion project. Two alternatives were assessed for the proposed C3 expansion project: upgrade of the existing PP1 and PP2 plants and construction of a new PP plant. A summary of the average points for the two options during the different phases of the project are presented in the table below:

Table 16: Summary of average points during the project lifecycle

PHASE	Component	Without Mitigation	With Mitigation
Construction	Upgrade of PP plants	-7.75	-5.50
	Construction of new PP plant	-8.29	-6.00
Operation	Upgrade of PP plants	-8	-6.00
	Construction of new PP plant	-8	-6.00
Decommissioning	C3 expansion project	-8.67	-5.67

From **Table 16** above, it can be seen that during the construction phase, the upgrade of the existing plants has a lower significance rating hence lower impact compared to construction of a new plant. This is mainly attributed to less disturbance of the environment during the upgrade of the PP plants. During the operation phase, there is no difference between the two alternatives pre-and post mitigation.

The findings conclude that there are **no environmental fatal flaws** that could prevent Sasol Polymers from continuing with the implementation of the proposed C3 expansion project, provided that the recommended mitigation and management measures contained in the preceding chapter and Environmental Management Programme (EMPr) are implemented (refer to **Appendix D**). *Thus, from all the findings of this report, it is recommended that the Environmental Authorisation be granted for the proposed C3 expansion project as per the project description provided in Section 3.2.*

The EMPr would be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for the entire life cycle of the project is considered to be vital in achieving the appropriate environmental management standards as detailed for this project. This is the view and recommendation of the Environmental Assessment Practitioner based on the findings of this Basic Assessment study.