



Labour-Intensive Construction (LIC) Orientation Training Course

Learner Manual

EPWP LABOUR-INTENSIVE CONSTRUCTION (LIC) TRAINING MANUALS

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Foreword

The Department of Public Works and Infrastructure (DPWI) is proud to present this Labour-Intensive Construction (LIC) Orientation Training Course, which aims to provide participants with the *awareness, advocacy, technical skills* and *knowledge* they need to incorporate LIC principles and processes in the implementation of **Expanded Public Works Programme (EPWP)** projects. It is with great pleasure that I present this redeveloped LIC training package, assessed and approved for continuing professional development (CPD) validation by the Engineering Council of South Africa (ECSA), Consulting Engineers South Africa (CESA), and other professional bodies in the building and construction industry.

The redevelopment of the existing LIC orientation training into a full package of new materials, including a Trainer Manual, a Learner Manual, PowerPoint slides, an Assessment & Evaluation Guide, and Reference Manual/Source Material, is a great step towards ensuring that all participants receive high-quality, engaging training that reflects adult-learning principles. The training aims to be a standalone, self-guided resource that a trainer can use to easily deliver the material to learners, primarily in a face-to-face setting, but with adaptations provided for online delivery.

LIC orientation training and capacity building are key activities in the EPWP's infrastructure sector. They are conducted for technical and non-technical officials to provide knowledge transfer and skills development. This activity has great potential to create long-term employment in the execution downstream of EPWP projects.

Where it is technically and economically feasible, the EPWP encourages using employment-intensive methods when implementing public projects and other assets. These methods link infrastructure development with employment creation, poverty reduction, and local economic and social development. These methods generally generate significantly more productive employment per unit of expenditure compared with conventional approaches. The ILO has advocated this approach to infrastructure development for more than four decades. A key principle of this is the effective use of local resources (labour, materials, service providers, tools and appropriate equipment, as well as knowledge) in delivering infrastructure assets, thereby improving the livelihoods of disadvantaged communities.

The main purpose of these training manuals is to guide the learning and delivery of the LIC Orientation Training Course and ultimately provide client bodies, technical practitioners, consultants, contractors and service providers with concise operational information on the planning, implementation and monitoring of LIC works, using employment-intensive techniques.

Therefore, the overall objective of developing these manuals is to effectively implement EPWP capacity building interventions, act as a guide in skills development/training, improve the efficiency and effectiveness of employment-intensive construction practices in the country, and ensure the uniform execution of various construction and maintenance activities.

The development of the manuals has been greatly enriched by a wide and comprehensive analytical and consultative process that has involved stakeholders within and outside of the DPWI, including the private sector, as well as peer reviews by subject matter specialists.

I earnestly hope the training manuals will improve the productivity and effectiveness of our LIC orientation training programmes, both in terms of skills development and employment generation.

I wish all participants well in their training in the LIC Orientation Training Course, and I hope the skills and knowledge learnt will be put into practice.

Ignatius Ariyo
Chief Director: EPWP Infrastructure Sector
Expanded Public Works Programme (EPWP)
Department of Public Works and Infrastructure (DPWI)

Preface

These manuals are created for those involved in training LIC orientation courses. The courses are designed for public officials, consultants, contractors, and other stakeholders engaged in implementing projects under the Expanded Public Works Programme (EPWP), which is coordinated by the Department of Public Works and Infrastructure (DPWI).

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Acknowledgements

The LIC Training Manuals are the result of a combined effort of Employment Intensive Investment Programme (EIIP) practitioners and stakeholders from the relevant departments and the private sector. Their development has been participatory, consultative, and informed by the particular needs of the EPWP implementing bodies.

I take this opportunity to thank all those involved in developing these manuals, including ILO colleagues, officials and practitioners from the DPWI, and other stakeholders. I sincerely hope all stakeholders who helped develop these manuals will take ownership and remain committed to their utilisation.

I specifically wish to express my gratitude to the ILO project staff for their in-depth study, analysis, and preparation of the source materials, as well as the subsequent compilation of the training manuals.

My special thanks go to the consultants who compiled the training manuals and those who conducted peer reviews for their valuable input and insight.

Thanks also to the development partners and the Government of South Africa, through the DPWI, for their unreserved support while preparing these manuals.

I also wish to acknowledge and appreciate the continued cooperation and cordial relationship between the ILO and the DPWI.

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ILO Decent Work Team for Eastern and
Southern Africa and ILO Country Office for
South Africa, Botswana, Lesotho, Namibia and Swaziland

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Abbreviations

BCEA	Basic Conditions of Employment Act
BoQ	Bill of Quantities
CBPF	Community Based Planning Facilitation
CESA	Consulting Engineers South Africa
CETA	Construction Education and Training Authority
CIDB	Construction Industry Development Board
CLO	Community Liaison Officer
COIDA	Compensation for Occupational Injuries and Diseases Act
DCP	Dynamic Cone Penetrometer
DEL	Department of Employment and Labour
DPWI	Department of Public Works and Infrastructure
EEA	Employment Equity Act
EIC	Equipment Intensive Construction
ELHUS	Excavate, Load, Haul, Unload and Spread
EPWP	Expanded Public Works Programme
EPWP-RS	EPWP Reporting System
FIDIC	International Federation of Consulting Engineers
FTE	Full Time Equivalent
GCC	General Conditions of Contract
IDT	Independent Development Trust
ILO	International Labour Organisation
JBCC	Joint Building Contracts Committee
LI	Labour-Intensive
LIC	Labour-Intensive Construction
LIM	Labour-Intensive Methods
LRA	Labour Relations Act
MBC	Machine Based Construction
M&E	Monitoring & Evaluation
NDP	National Development Plan
NDPWI	National Department of Public Works and Infrastructure
NEC	New Engineering Contract
NQF	National Qualifications Framework
OHSA	Occupational Health and Safety Act
OSH	Occupational Safety and Health
PoW	Program of Works
PPE	Personal Protective Equipment
PSC	Project Steering Committee
PWDs	Persons With Disabilities

QCTO	Quality Council for Trades and Occupations
QMS	Quality Management System
SABS	South African Bureau of Standards
SAICE	South African Institution of Civil Engineering
SANS	South African National Standards
SDA	Skills Development Act
SMME	Small, Medium & Micro Enterprise
UIA	Unemployment Insurance Act
UIF	Unemployment Insurance Fund
VAT	Value Added Tax
Wd	Worker days
WO	Work Opportunity

Preliminaries

Welcome to the Training!

This Learner Manual is designed to provide you, the learner, with all the information you need to complete the LIC Orientation Training. It supports the content with discussions and interactive exercises to help you understand and internalise the concepts and terminology introduced during the training. Follow along in this Learner Manual as the trainer walks you through the material for this course. Make notes and sketches to help you understand and remember what you learned. Important and relevant information and skills are transferred by sharing, so take notes and share information with your colleagues.

You will be provided with a separate notepad to take notes with, and this Learner Manual will also serve as a resource to refer to back in your workplace.

A description of the session objectives and assessment criteria precedes each topic/section. These descriptions define what you must know and be able to do to be awarded the continuing professional development (CPD) points/credits attached to this course. These credits are building blocks towards being a better professional upon successful assessment!

As a learner, you have an essential role in making this training successful, which includes:

- Prepare for assessments
- Accept the responsibility of learning and participate accordingly
- Accept the responsibility to produce/deliver evidence where needed
- Adhere to the ground rules

Background and Purpose of the Training

This two-day Labour-Intensive Construction (LIC) Orientation Training Course is divided into topics and information that all participants must know as the 'fundamentals'. Other content is more specialised and is designed for certain learner groups, depending on their work roles. These topics will be delivered as separate elective topics.

Training Aim, Objectives and Outcomes

Aim and Outcomes

The overall aim is that by the end of this training, learners will understand, appreciate, and be able to apply LIC's principles and practices in the planning, implementation, and reporting of EPWP projects.

In addition, the desired generic outcomes of the training are that participants feel:

- **Motivated** to put into practice what they have learned about LIC
- **Confident** about their understanding of LIC concepts and terminology
- **Enthusiastic** about how LIC can bring about positive change for communities

Specific Objectives of the Training Course

By the end of this training course, participants within the built environment (among others) will be able to:

- Demonstrate awareness and understanding of the concepts, principles and terminology of Labour-Intensive Construction (LIC) and its methods
- Develop and promote LIC strategies
- Demonstrate application in the improved planning, implementation and reporting of EPWP LIC projects
- Successfully plan, design, implement, maintain, and report on EPWP LIC projects
- Visualise and articulate how to complete responses to tenders aligned with EPWP LIC principles

! In addition to these objectives, each session will contain its specific objectives of what participants should *know* and *be able to do* by the end of each session.

Who is the Training For?

If you are attending this training, you are likely to belong to one of two target groups:

Technical: This group includes professionals and related cadres with technical backgrounds in building and construction, such as engineers, architects, quantity surveyors, project managers, and associated technicians.

Non-technical: This group comprises decision-makers, policymakers, leaders, politicians and others who do not necessarily have a technical background in LIC or conventional construction in general. Other intended participants in this category include senior officers in various departments, supply chain management and legal officers involved in EPWP implementation.

Training Methodology and Delivery

This training has been designed to be as interactive and participatory as possible, with close attention paid to adult learning principles throughout. Each session contains some important content that your trainer will present, as well as an opportunity to better understand the content through the following types of participatory activities:

- Experience sharing
- Questions for discussion (in small groups and plenary)
- Group work exercises (including analysis and presentation activities)
- Videos and discussions
- Quizzes will test understanding mid-way through and at the end of training
- Recap and feedback

The content has been prepared so that approximately 75% of the course covers fundamental topics (Sessions 1-7), and the other 25% covers elective topics (Sessions 8-11).

The training has been designed to balance the content presentation (50%) with the interactive/participatory activities listed above (50%).

Symbols and Icons

In this Learner Manual, you will see several symbols and icons used to indicate different types of information and activities:

Symbol/Icon	Description
	This symbol indicates there are questions for discussion, which are usually discussed first in pairs or threes, and then in plenary.
	This symbol can usually be found at the beginning of a session, where key concepts are being introduced and/or key questions are being answered to help with understanding the information that will follow in the session.
	This symbol indicates there is an experience sharing opportunity, where you are asked to reflect and talk about your own experience in the workplace with LIC, so that other participants can also share and learn from your experience.
	This symbol indicates there is a video to watch as part of the session, which your trainer will screen. The video may be shown as a stand-alone, or as part of the main exercise for the session.
	This symbol indicates important information that you must pay close attention to.
	These symbols indicate the main exercise for the session. Each session has at least one exercise. These are usually group-based, and require some discussion, calculation, analysis and/or presentation.
	This symbol is found at the end of each session and shows you where to find more information about the topics presented in the session you have just completed.

Training Course Content

Session 1: Introduction to EPWP and Labour-Intensive Construction (LIC)

- Definitions—LIC, LIM, EPWP
- Background to EPWP and LIC
- Key Outputs of the EPWP Programme
- EPWP Phase vs Demographic Targets
- Advantages of LIC
- Success Story: The Mndwaka Dam Project
- When is it Suitable/Unsuitable to Use LIC?
- What Types of Infrastructure Projects are Suitable for a Labour-Intensive Approach?
- Comparing Employment Creation—LIC vs EIC
- 10 Common Myths About LIC

Session 2: LIC Concepts and Terminology

- Key LIC Terminology—WO, Person/Worker Days, FTE, LI
- Calculating Work Opportunities (WOs) and Person/Worker Days
- How is a 'Working Year' Calculated?
- How to Calculate Full-Time Equivalent (FTE)
- WOs and FTEs for Measuring Created Employment
- Labour Intensity
- Task Rate
- Target Setting—WOs and FTEs

Session 3: Task System and Productivity

- Task Work Explained
- Time-Based vs Productivity-Based Systems
- Essential Considerations for Using the Task Work System
- Factors Affecting the Productivity of Workers
- How to Set a Task Rate from a Work Study
- Productivity Comparison
- Sample Indicative Daily Rates Per Person
- Important Considerations for Task Rates
- Task setting—Team Balancing
- Task setting—Checklist of Questions to Ask
- Task System Challenges and Solutions
- Video—EPWP Technical Objectives

Session 4: Overview of EPWP Implementation Guidelines

- EPWP Cross-Cutting Issues
- Cross-Cutting Issues—Convergence
- Cross-Cutting Issues—Green Jobs
- Cross-Cutting Issues—Sustainable Livelihoods
- Design of LI Works Checklist

Session 5: Interventions at different stages of the Project Cycle

- The EPWP Infrastructure Project Cycle
- The Project Identification and Key Stakeholders
- The Planning, Preparation and Key Stakeholders
- The Design and Procurement and Key Stakeholders
- The Implementation and Key Stakeholders
- The Maintenance and Key Stakeholders
- The Monitoring and Evaluation and Key Stakeholders

Session 6: EPWP Recruitment Guidelines, Ministerial Determination, Code of Good Practice, Social/Community Facilitation and Labour Issues

- What are the EPWP Recruitment Guidelines?
- Video—EPWP Recruitment Guidelines Drama
- Key Recruitment Guiding Principles
- Key Issues to be Considered in the Recruitment of EPWP Participants
- Roles and Responsibilities of Stakeholders in the EPWP Recruitment Process
- What is the Ministerial Determination and Code of Good Practice?
- What Parts of the Basic Conditions of Employment Act (BCEA) Does the Ministerial Determination Cover?
- The Code of Good Practice
- Setting Rates of Pay
- What is Social Facilitation?
- Why is Social Facilitation Necessary?
- Forms of Social Facilitation
- EPWP and Social Facilitation

Session 7: EPWP Monitoring, Evaluation & Reporting

- What is the Purpose of M&E in EPWP?
- M&E Plan for EPWP
- Information Sources for EPWP M&E and Reporting
- EPWP-RS System Data Flow

Session 8: Elective 1. Design Principles (Roadworks & Buildings)

- Summary of LIC Project Design Principles
- What are the EPWP Focus Areas for LIC Projects?
- Possible LIC Works for EPWP Projects
- What are the General Design Considerations for LIC Projects?
- EPWP Programme Indicators & Minimum LI Targets
- Design Consideration in Detail: LIC Project Selection
- Example of Classroom Construction Analysis
- Example of Single-Storey House Cost Breakdown
- Work Activities: Typical Building Project Components
- Example of Labour Requirements for Building Works
- Design Principles for Earthworks

Session 9: Elective 2. Design Principles (Water/Sanitation & Solid Waste Management)

- What are Some of the Critical Design Considerations for LI works?
- Components of Typical Infrastructure Works Project
- Tools and Equipment
- Setting Out (for pipework)
- Site Clearing
- Earthworks (Trenching)
- Pipe Laying—Water Pipes
- Wastewater/Sewerage Works
- Pipes Specifications
- Manhole Ring Masses
- Maintenance of Pipes and Quality Control
- LIC Works in Major Projects
- Solid Waste Management
- Typical Waste Flow
- Different Types of Solid Waste
- Different Methods of Solid Waste Collection and Management

Session 10: Elective 3. Alignment of Projects

- Why Align Projects to EPWP Principles and Procedures?
- The Client-Consultant Contract
- Available Forms of Contract
- Project Cover Document
- Template
- Summary Based on Annex F of the Standard Conditions of Tender (CIDB 2010)
- Clauses to be Aligned
- The Tender Section
- The Contract Section
- Re-Alignment Example

Session 11: Elective 4. Costing of LI Works

- What are the Guidelines for Costing Labour-Based Road Works?
- What are the Causes of Costing Disparities?
- Excel Program—Overview of the Workbooks
- Workbook 1. Basic Data Inputs
- Workbook 2. Resource Input Calculations
- Workbook 3. Unit Rate Summary Calculations
- Workbook 4. Bill of Quantities
- Workflow on How to Use the Excel Program
- Why Do We Need Estimates?
- Estimating Phases and the Estimating Process
- Cost Components and Examples
- Unit Rate Calculation for a Labour-Intensive Project
- Cost Estimating—Planning Checklist
- Information Required for Pricing
- Unit Rate Calculation

- Calculating Labour Cost and All-In Daily Rate and Examples
- Calculating Tool Cost and Average Tools Requirement
- Calculating the Materials Cost Input and Equipment Costs
- Example of Activities with Labour, Materials and Equipment Inputs—Stone Masonry
- Building Up the Costs—Chart Methods
- Estimating Guidelines for Planning
- Project Cost Estimating—Summary of Challenges and Tools

Training Course Overview and Timings

Delivered Over: 2 days

Day 1

Session	Indicative Timing	Summary of Content and Exercises
Introductory Session: Getting Started	1 hour	• Introduction and Icebreaker Exercises
		• Aim, Objectives, Outcomes
		• Pre-training Questions
Break	0.5 hours	• Networking with Other Participants
Session 1: Introduction to LIC and EPWP	1.5 hours	• Definitions—LIC, LIM, EPWP
		• Advantages of LIC
		• 10 Common Myths about LIC
		• Exercise 1: Group Work—Challenging thinking around LIC—10 common myths
Session 2: LIC Concepts and Terminology	1.5 hours	• Some Key Terminology for LIC
		• Calculating WO, Worker Days, FTE, LI (%)
		• Estimating WOs and FTEs for projects
		• Exercise 2a, b, c: Group Work—Calculations
Lunch	1 hour	• Networking with Other Participants
Session 3: Task System & Productivity	1 hour	• Task Work Explained
		• How to Set a Task Rate from a Work Study
		• Important Considerations for the Task Rate
		• Exercise 3: Video—EPWP Technical Objectives
Session 4: EPWP Implementation Guidelines	1 hour	• Task Work Explained
		• How to Set a Task Rate from a Work Study
		• Important Considerations for the Task Rate
		• Exercise 4: Group Work—Analysis of the ‘Design of LI Works’ Checklist
	15 minutes	• End of Day 1 Feedback and Day 1 Close
End of Day 1		

Day 2

Session	Indicative Timing	Summary of Content and Exercises
Day 1 Recap	<i>10 minutes</i>	<ul style="list-style-type: none"> Recap on Day 1 and an Opportunity to Ask Any Questions Arising from Day 1.
Session 5: Interventions at Different Stages of the Project Cycle	<i>50 minutes</i>	<ul style="list-style-type: none"> Overview of the EPWP Project Cycle
		<ul style="list-style-type: none"> Key Activities for Each Phase of the Cycle
		<ul style="list-style-type: none"> Key Stakeholders and Their Roles
		<ul style="list-style-type: none"> Exercise 5: Group Work—Presenting the Phases of the Project Cycle
Break	<i>0.5 hours</i>	<ul style="list-style-type: none"> Networking with Other Participants
Session 6: Recruitment Guidelines, Ministerial Determination and Code of Good Practice	<i>1 hour</i>	<ul style="list-style-type: none"> Recruitment Guidelines Video
		<ul style="list-style-type: none"> Recruitment Guiding Principles
		<ul style="list-style-type: none"> Ministerial Determination and Code of Good Practice
		<ul style="list-style-type: none"> Exercise 6: Video—EPWP Recruitment Guidelines Drama, ‘Bridging Equality’
Session 7: EPWP M&E and Reporting	<i>1 hour</i>	<ul style="list-style-type: none"> Purpose of EPWP M&E
		<ul style="list-style-type: none"> Information Sources for EPWP M&E
		<ul style="list-style-type: none"> EPWP Reporting System
		<ul style="list-style-type: none"> Questions for Discussion—Small Groups
Lunch	<i>1 hour</i>	<ul style="list-style-type: none"> Networking With Other Participants
Sessions 8-11: Elective Sessions (Choose 2-3 topics, each topic duration of 1-1.5 hours)	<i>3 hours in total</i>	<ul style="list-style-type: none"> Elective 1. Design Principles: Roadworks & Buildings (1-1.5 hours)
		<ul style="list-style-type: none"> Elective 2. Design Principles: Water & Sanitation / Solid Waste Management (1-1.5 hours)
		<ul style="list-style-type: none"> Elective 3. Alignment of Projects (1-1.5 hours)
		<ul style="list-style-type: none"> Elective 4. Costing of LI Works (1-1.5 hours)
Conclusion Session: Summative Assessment and Evaluation	<i>0.5-1 hour</i>	<ul style="list-style-type: none"> Training Summary
		<ul style="list-style-type: none"> Group Action Plan Exercise
		<ul style="list-style-type: none"> End of Day 2 Quiz & Evaluation
		<ul style="list-style-type: none"> Closing
End of Day 2 - End of Training Course		

Introduction Session: Getting Started

Session Objectives:

- Create a comfortable and encouraging learning environment
- Provide an overview of the training, including aims and objectives
- Understand learners' expectations of the training
- Agree on ground rules for the training

Welcome!



Topics your trainer is likely to cover in this session:

1. Welcome, introductions and housekeeping
2. Training aim, objectives, outcomes and overview
3. Icebreaker questions or activities
4. Expectations and ground rules
5. Pre-training questions and self-assessment

*Tell us something surprising about yourself
that we don't already know*

Icebreaker Question

Read the question above and discuss your ideas with the person next to you, then share them with the group.

Session 1: Introduction to EPWP and Labour-Intensive Construction (LIC)

Session Objectives:

By the end of this session participants will be able to:

- Explain why EPWP uses an LIC approach to achieve its objectives
- Identify the benefits, limitations and application of an LIC approach to infrastructure development
- Challenge their existing thinking about LIC, through an exploration of 10 common myths



Question for Discussion

Discuss the following question in twos or threes and then brainstorm in plenary.

- *What comes to mind when you hear the term ‘Labour-Intensive Construction?’*

1.1 Some definitions explained

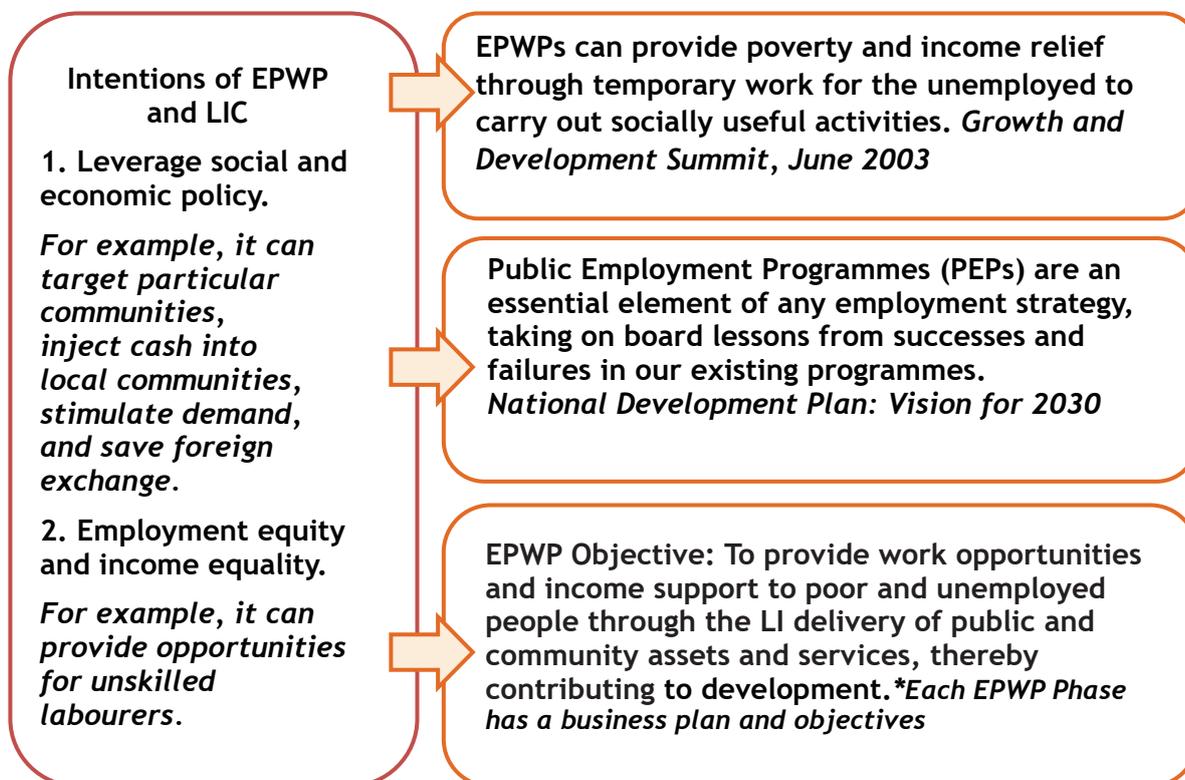
Expanded Public Works Programme (EPWP): Refers to a government-initiated programme funded from public resources to create work opportunities (using LI methods) to provide public or community assets and/or services. EPWP is designed to address the triple challenges of ‘unemployment, poverty, and inequality’ faced in South Africa. In the context of the infrastructure component of EPWP, ‘Labour-Intensive’ implies using labour as a primary resource, supplemented by equipment only where it is not practical or cost-effective to use labour.

Labour-Intensive Construction (LIC): This refers to an approach used in the EPWP for construction projects in the infrastructure sector. An LIC approach uses LI methods for implementing public works such as roads, dams, and water provision and sanitation works, among others.

Labour-Intensive Methods (LIM): Refers to the methods by which LIC projects are carried out. LIMs involve a mix of labour using hand tools and light plant and equipment in preference to heavy machinery, wherever technically and economically feasible, without compromising the quality of the final product.

! In this training, your trainers will refer to LIC and LIM as appropriate.

1.2 Diagram 1: Background to EPWP and LIC



Source: ILO training presentation, 'Labour-Intensive Methods: Technology Choice'

! The EPWP infrastructure sector emphasises asset creation and service delivery by optimising the creation of work opportunities using LIC and LIM. LIM projects are also characterised by: Employment creation; resource optimisation; optimisation of quality, cost and time; skills development and transfer; community ownership; decent work; and sustainability.

1.3 EPWP Universal Principles

- Workers are recruited through a fair and transparent process, according to the EPWP recruitment guidelines.
- Adherence to the conditions under the EPWP ministerial determination and payments of wage that is equal to or above the EPWP minimum wage.
- Work provides or enhances public goods or community services.
- Compliance with minimum LI, appropriate to the sector.

Note: More detail on these principles is provided in the **Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) Third Edition, 2015.**

1.4 Key Outputs of the EPWP

One of the main indicators of EPWP is the work opportunities (WOs) created. We will look at WO's in more detail in Session 2. EPWP is implemented in five-year phases, each with its set objectives and targets. For example, EPWP Phase 3 was carried out between 1 April 2014 and 31 March 2019.

- The WO's in EPWP Phase 3 were achieved by implementing 69,891 projects across all provinces.
- Of the WO's created, 2 million were for youth, 2.9 million for women, and 55,346 for people with disabilities.
- R36 billion was transferred to participants as wages in poor communities. This income is also a form of economic stimulus targeted directly at the poor.
- The assets and services provided included 40,000 km of routine road maintenance and installing 17,644 km of water reticulation. These assets had transformative impacts on development in various sectors.
- Many EPWP Infrastructure projects implemented in Phase 3 utilised Labour-Intensive Construction (LIC) Methods, explored further below.

* Please note that each EPWP Phase has its targets

1.5 Experience Sharing



Experience Sharing

Discuss the following questions in small groups and then share in plenary.

- Have you ever been involved in an EPWP Labour-Intensive Construction (LIC) project?

If yes, share your experiences:

- What was your role?
- What was the project, and was the outcome successful?
- What was your opinion about choosing an LIC approach for this project?

If not:

- What are the reasons/challenges of having LIC projects from your perspective?
- Would you advocate for LIC projects in future? Why/why not?

1.6 EPWP Demographic Targets

- The EPWP has a prevailing minimum daily wage rate set by the Department of Employment and Labour. This rate is revised annually.
- EPWP has four types of targeting for its LIC projects.
 1. Self-targeting: Those who identify as wanting to participate through the EPWP minimum wage.
 2. Geographic targeting: Focus on marginalised areas and poor communities with a high number of unemployed (this is why some provinces have more EPWP projects than others).
 3. Community targeting: The community selects those most in need based on transparent criteria and processes.
 4. Demographic targeting: Certain minimum percentages of different demographics are set occasionally. The current EPWP demographic targets are:
 - 60% women
 - 55% youth (currently defined as men and women between 18-35yrs)
 - 2% persons with disabilities (PWDs)

This means that for every project, at least 60% of the workforce must be women, at least 55% must be youth, and at least 2% must be PWDs.

! These categories overlap, which is why the numbers add up to more than 100%.
Example: Using the following numbers, calculate whether the proposed project is likely to meet the current targets or not.

- A project will require 100 workers.
- 30 are young women
 - 40 are adult women (1 of these 40 adult women is a PWD)
 - 20 are young men
 - 10 are adult men (1 of these 10 adult men is a PWD)

Work in pairs and write your calculations below:

.....

.....

Are all the above demographic targets being met? If not, which one is falling short?

1.7 Table 1: Labour-Intensive vs Equipment/Capital-Intensive

Labour-Intensive Construction (more labour)	Equipment/Capital-Intensive Construction (less labour)
<ul style="list-style-type: none"> • Optimum/efficient use of labour as major resource. • Appropriate use of light/intermediary equipment. • Yields more socio-economic benefits for the local economy. 	<ul style="list-style-type: none"> • Maximises equipment usage. • Labour only used where it is not economically viable or technically feasible to use equipment. • Uses conventional methods.
<p>LIC has been proven to produce quality infrastructure works:</p> <ul style="list-style-type: none"> • Within a reasonable timeframe and at a reasonable cost • That are easy to maintain • That offer decent work for target groups • That provide equal opportunities for work, training and wages 	

Source: ILO training presentation, *Labour-Intensive Methods: Technology Choice*

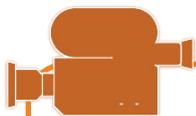
1.8 Advantages of LIC

- Targets communities in need with employment opportunities.
- Injects cash into local economies and stimulates demand.
- It saves foreign exchange. Heavy machinery is usually imported from overseas using foreign currency (such as USD) and drains foreign reserves.
- Employment opportunities and training for unskilled, semi-skilled labour.
- The use of local resources enhances sustainability.
- Environmentally friendly.
- Technology can be used where equipment cannot.
- Mitigates rural-urban migration.
- Skills transfer to workers (essential for some maintenance activities).
- Instils a sense of ownership and empowerment in local communities.
- Promotes skill and entrepreneurial development/self-employment.
- Enhances participation through community initiatives and management.
- Offers equal opportunities to women, youth and persons with disabilities (PWDs).
- Decent working conditions.
- Encourages technical innovation.

What is needed for a sustainable LIC Approach?

- Affordable wage rates.
- High availability of labour.
- Availability of sustainable local resources.
- A supportive policy framework.
- Sustained funding and dedicated champions.
- Stakeholder participation, training and capacity development.

1.9 Success Story: The Mndwaka Dam Project



Mndwaka Dam Project, Amathole District, Eastern Cape

Mndwaka Dam is located along the Wild Coast in the Eastern Cape. The Amathole District Municipality commissioned it, and the Department of Water and Sanitation funded it. The DPWI, through its EPWP Infrastructure Large Projects Directorate, provided technical support to implement the project labour-intensively.

The project helped to restore the dignity of communities residing in rural villages in the Mbashe Local Municipality in the Eastern Cape, connecting over 40,000 people from 63 villages to potable water. The Mndwaka Dam is the highest rubble masonry concrete dam built in Southern Africa using the EPWP's LIC. The project created short-to-medium-term work and training opportunities for 326 people in the area. In terms of targeted opportunities, of those 326 people, 54 were young women, 178 young men, 26 adult women, 67 adult men, and one person with a disability.

“The total value of the project was R76 million, and over 20% of that amount was used to pay wage,” explained Project Manager Mr Amandla Nquma. “We used LI methods to build the dam because we wanted to ensure that the communities around this area benefited from the construction of this asset.” In addition, the dam was built using primarily local materials. “The rocks used in the dam’s construction were sourced locally. Only a few materials, such as cement, were brought in from outside.”

Regarding skills building and future opportunities, participants received training in various activities, including operating the batch plant and crusher machines. Most of the training was done in-house. After completing the project, seven participants secured permanent employment with the contractor, while 33 were employed elsewhere. Some participants went on to further their studies.

Source: Adapted from Public Employment Programmes: Changing lives for the better (EPWP Brochure)



1.10 Table 2: When is it suitable/unsuitable to use LIC?

Labour-Intensive Construction (LIC)		
Consideration	Suitable	Not Suitable
Wage rates	When these are low. If wages are too high, an LIC approach may not be economically viable. However, in certain contexts, governments can be willing to adopt an LIC approach and bear the additional cost.	When these go beyond the 'break even wage', an LIC approach becomes uneconomical compared to equipment intensive.
Labour availability	There must be enough poor people living within walking distance, who are willing to participate in the project.	If there are not enough willing and available people living near the project site, an LIC approach is unlikely to be sustainable.
Availability of local resources	There needs to be an available supply of local resources, to increase environmental sustainability, and minimise haulage requirements.	If no local resources are available, an LIC approach may not be economical.
Type of work required	The type of work required needs to be suitable for a mainly unskilled and semi-skilled labour force.	If much of the work requires specialised skills, or is highly mechanised, it may not be suitable to use an LIC approach.

Source: Source: ILO training presentation, 'Labour-Intensive Methods: Technology Choice'

1.11 What types of infrastructure projects are suitable for a Labour-Intensive approach?

- Roads
- Fencing
- Erection of road signs
- Grass maintenance
- Road reserve maintenance
- Rubble masonry bridges, culverts and retaining walls
- Stormwater drainage
- Sewers
- Water supply
- Haulage of materials
- Fencing
- Houses, schools and clinics

Source: Appendix B, EPWP Implementation Guidelines for Labour-Intensive Infrastructure Projects, 3rd edition, 2015.



Source: DPWI/ILO

LIC projects aim to address issues such as high unemployment rates and wealth inequality.

Table 3 below shows how LIC projects can create more opportunities for employment, compared with equipment intensive projects.

1.12 Table 3: Comparing Employment Creation—Labour-Intensive Construction (LIC) vs Equipment Intensive Construction (EIC)

ROAD TYPE	WIDTH	CONSTRUCTION TECHNOLOGY	LABOUR REQUIREMENT	LABOUR INCREASE:
Class D Gravel Road	5 m	Equipment-Intensive Labour-Intensive	309 wd 2 294 wd	642%
Class D Asphalt Road	3 m	Equipment-Intensive Labour-Intensive	864 wd 2 610 wd	202%
Class D Concrete Block Road	3 m	Equipment-Intensive Labour-Intensive	819 wd 2 558 wd	212%
Class D Asphalt Road	5 m	Equipment-Intensive Labour-Intensive	1 246 wd 3 956 wd	217%
Class D Concrete Block Road	5 m	Equipment-Intensive Labour-Intensive	1 103 wd 3 763 wd	241%
Class D Asphalt Road	6 m	Equipment-Intensive Labour-Intensive	1 586 wd 5 693 wd	259%
Class D Concrete Block Road	6 m	Equipment-Intensive Labour-Intensive	1 509 wd 6 143 wd	307%

wd = Worker days

With the same investment, LIC creates 2 to 6 times more employment than EIC.

Source: Adapted from CIDB Best Practice Guideline Part 1

1.13 Exercise 1: Group Work—Challenging Myths



Exercise 1: Challenging thinking around LIC—10 common myths

Your trainer will ask you to work in groups of three and assign **one (or two)** of the 10 common myths about LIC, as explained in **Annex 1**.

In your group, read your assigned myth(s)/response and discuss:

- What do you think about the response to your assigned myth? Has it helped inform your thinking and/or changed your views and attitudes about LIC?
- Prepare a short summary of the key points of the myth/response. You will present this to the wider group.
- Select one person in your group to present. The presenter should:
 1. Give the key points of the myth and the response, as discussed in your group.
 2. Summarise your group's views about the myth and its response. Does the group believe the myth? Or has the response to the myth helped change some views and attitudes within the group?

1.14 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- Technical Brief 6. Common myths about Labour-Intensive Methods, ILO/DPWI
- EPWP e-learning course, Module 1: Getting to know the EPWP. More details on the EPW e-learning course can be obtained from the Chief Directorate - Infrastructure
- Public Employment Programmes: Changing lives for the better (EPWP Brochure)
- Employment Intensive Infrastructure Programmes: Labour Policies and Practices'. ILO

Session 2: LIC Concepts and Terminology

Session Objectives:

By the end of this session, participants will be able to:

- Define key concepts and terms used in EPWP LIC projects
- Calculate important parameters for LIC projects, including work opportunities (WO), worker days/person days, full time equivalent (FTE) and labour intensity (LI)
- Estimate targets for WOs and FTEs, using project information such as budget, norms and scope of work

! A comprehensive list of terms and their definitions can be found in the **Glossary** at the end of this Learner Manual.



2.1 Table 4. Some Key LIC Terminology (in alphabetical order)

Term	Description
Full time Equivalent (FTE)	One person year of employment, which is equivalent to <i>230 effective person days</i> . This is also known as a working year. (See below for an example).
Group Task	A work method where tasks are organised based on the number of people assigned to complete one task (to produce a defined output in a day).
Labour Intensity (LI %)	Expenditure on unskilled and semi-skilled labour expressed as a <i>percentage</i> of the total expenditure on project activities (for LIC projects). For example, if <i>half of all expenditure</i> for an LIC project was on wages for unskilled and semi-skilled labour, the LI % for that project = 50%.
Labour-Intensive	Methods of construction and maintenance involving a mix of labour and machines without compromising on quality, where labour is the primary resource, supported by light plant and equipment for activities that cannot be feasibly done by labour alone.
Task Rate	Amount of work to be performed by a worker to a defined quantity and quality and be completed in one working day.
Wage Rate	The set wage to be paid to a worker (based on time or task), who completes the assigned work for the day. The EPWP minimum wage rate is revised annually.
Work Opportunity (WO)	Paid work created for an individual on a project, <i>for any period of time</i> . For example, 10 people employed on a project equals 10 WOs, even if those people were employed for a short time.
Person/Worker Days	Number of workers on a project, multiplied by the number of days <i>that each person worked</i> . For example, 10 workers who worked for 10 days each on a project, equals 100 worker days.

Source: Source: ILO training presentation

2.2 Work Opportunity (WO)

As described above, a WO refers to paid work created for an individual on an EPWP project for *any period*, within the employment conditions of the Code of Good Practice for the EPWP. The same individual can be employed at different times on different projects (not concurrently) and each period of employment will be counted as a WO.

If you want to calculate the total number of WOs created by one project, it is not sufficient to just count the total number of workers on any given day. Instead count the total number of different individuals who have worked on the project over the course of its lifetime. WOs are valid for the fiscal year of the implementing body, for example:

National/Provincial: April-March

Municipal: July-June

Example:

The following WOs for three different projects are calculated below.

Month	Project A	Project B	Project C
1	Tebogo	Dora	Nosipho
2	Tebogo	Dora	
3	Tebogo		Nosipho
4	Tebogo		Dora
Total WO	1	1	2

2.3 Person Days

Person days (used interchangeably with worker days) refer to the number of people who worked on a project multiplied by the number of days each person worked.

Example:

50 people all working on a project for 10 days = $50 \times 10 = 500$ person days.

During project implementation the contractor is required to keep track of the total number of days that each worker works on the project. To plan and design however, we assume that one year contains 230 working days. For months, we calculate as a **proportion** of a year, for example one month = $1/12 \times 230$.

2.4 Exercise 2a: Calculating Work Opportunities and Person Days



Exercise 2a: Calculating Work Opportunities and Worker Days

Work in groups of two or three to calculate the answers to the following questions, based on what you have learned in this session.

1. A group of 50 are employed for two months to work on a road maintenance project.

a) Calculate the total number of WOs for this project:

.....

b) Calculate the total number of person days for this project (duration = two months):

.....

2. A road construction project starts with a team of 50 workers to complete fill and cut works over one-month. On completion of the fill and cut works, *an additional* 50 workers start with the construction of a low-volume road, over a three-month period.

a) Calculate the total number of WOs for this project:

.....

b) Calculate the total number of person days for this project, using proportion of a year to calculate duration:

.....

The next part of this equation would be to calculate the Full-Time Equivalent (FTE). We will look at FTE in the next section.

2.5 Full Time Equivalent (FTE)

As mentioned above, one FTE is equal to *one working year*, which is calculated below:

2.5.1 How is a 'Working Year' Calculated?

A working year (or a person-year of employment) is calculated as 230 days. This number comprises the days remaining after deducting provision for non-productive days in a year, for example, weekends, leave, and holidays. For example:

Step 1. Days in a calendar year = 365 and 1/4 (round down to 365)

365

Step 2. Less weekends (given there are 52 weeks in a year)
(52 weeks x 2 days = 104 days)

365
-104
261

Step 3. Less national holidays (calculated as 10 days on average per year)

261
-10
251

Step 4. Less leave days (calculated as 21 days)

251
-21
230

! This number of 230 days is important because it becomes the basis for 1 Full Time Equivalent (FTE), which is one of the main indicators for measuring the success of employment created by EPWP projects.

Example:

The table below provides some examples that equal 1 FTE.

Number of workers	Months Employed	FTE
1	12	1
2	6	1
3	4	1
4	3	1
6	2	1
12	1	1

2.5.2 How to Calculate FTE

Example:

An example of how to calculate FTE is given below.

$$FTE = \frac{\text{Person days}}{230}$$

In this formula, the FTE is calculated by dividing the number of worker days by 230 (the number of days in a 'working year')

$$FTE = \frac{WO \times \text{duration days}}{230}$$

This formula is similar except it uses WO multiplied by duration, then divides by 230.

Let's see how this looks with real numbers:

If we have a project with a large group of 25,000 workers (WO) who will work for 120 days (duration), what is the FTE for this group?

$$FTE = \frac{25,000 \times 120}{230}$$

The FTE for this project is 13,043

2.5.3 WOs and FTEs for Measuring Employment Created

WOs and FTEs are used as the main parameters for measuring the employment created in EPWP LIC projects. So, which one has more impact on the community in terms of employment benefits?

Work Opportunities (WOs)	Full Time Equivalentents (FTEs)
Create openings for as many workers as possible.	Stretch the employment opportunities for as long as possible.

Example:

Project A employs 80 workers for a duration of four months.	Project B employs 50 workers for a duration of eight months.
Which has more impact on job creation?	
Work Opportunities = 80	Work Opportunities = 50
FTE = {80 x (4/12) x 230}/230 = 26.67	FTE = {50 x (8/12) x 230}/230 = 33.33
Project A has a lower WO	Project B has a higher FTE A higher FTE indicates more benefits to the community
Conclusion: Both WO and FTE are important—the aim is to create as many work opportunities as you can, but also for as long as possible.	

2.6 Exercise 2b: Calculating FTEs



Exercise 2b: Calculating FTEs

Work in groups of two or three people (the same as for 2a) to calculate the answers to the following questions based on what you have learned in this session.

1. A group of 50 people are all employed for two months on a road maintenance project.
a) Based on the above figures, calculate the Full-Time Equivalent (FTE) for this project:

.....
.....

2. A road construction project starts with 50 workers completing fill and cut works over one month. After the fill and cut works are completed, an additional 50 workers start constructing a low-volume road over three months. The WO is 100, and worker days are calculated as WO x duration.

a) Based on the above, calculate the worker days and the FTE for this project:

.....
.....

2.7 Labour Intensity

Labour Intensity is the expenditure on **unskilled and semi-skilled** labour wages, expressed as a percentage of the total expenditure on project activities (for LIC projects). Therefore, if *half of all expenditure* for an LIC project was on wages for *unskilled and semi-skilled* labour, the LI % for that project = 50%

To calculate Labour Intensity (%), the following overall project costs need to be included:

- Materials
- Equipment/Plant
- **Labour**
- Supervision, Fees, Overheads etc

Some Recommended LI% Ranges for Infrastructure Projects

Category	Sub-Category	Indicator	Recommended Minimum Range of LI
Construction	Building	No., m ²	10-30%
	Maintenance	No., m ²	20-70%
	Landscaping	m ²	40-70%

Source: EPWP Infrastructure Guidelines, 3rd Edition.

Example:

Step 1. From the above definition of LI, we can create an equation like this:

$$LI (\%) = \frac{\text{Expenditure on semi – skilled and unskilled wages}}{\text{Total project expenditure budget}} \times 100$$

To find expenditure on semi-skilled and unskilled wages, we use this:

$$\text{Expenditure on wages} = WO \times \text{duration (days)} \times \text{Wage Rate}$$

Step 2. Therefore, we can substitute in the equation like this:

$$LI (\%) = \frac{WO \times \text{duration} \times \text{Wage Rate}}{\text{Total project expenditure}} \times 100$$

$$LI (\%) = \frac{\text{Persondays} \times \text{Wage Rate}}{\text{Total project expenditure}} \times 100$$

OR

To make this calculation, we need to know what the prevailing wage rate is. This rate is set by the Department of Employment and Labour and varies annually

Step 3. Another way to express this equation is using the FTE, instead of WO x duration (Worker days). We know from earlier that:

Therefore:
$$FTE = \frac{\text{Persondays}}{230}$$

$$\text{Persondays} = FTE \times 230$$

These two equations mean the same thing, they are just expressed differently. Your trainer will explain

Step 4. Now we can substitute 'FTE x 230' into our equation, instead of 'worker days', as shown below:

$$LI (\%) = \frac{FTE \times 230 \times \text{Wage Rate}}{\text{Total project expenditure}} \times 100$$

We can use the equation in Step 4 to calculate LI from the FTE, and we can use the equation in Step 2 to calculate LI from the worker days OR from the Work Opportunities x Duration.

2.8 Exercise 2c: Calculating LI, WOs, FTEs

Exercise 2c: Calculating Labour Intensity (%), WOs, FTEs

Work in groups of six to eight people (bigger groups than for 2a and 2b) to calculate the answers to the following questions, based on what you have learned in this session.

1. A public body has been allocated a budget of R2.5 billion with a condition that they must create nine FTEs per R1 million of expenditure. If this condition is met, using a wage rate of R200, what is the labour intensity?

.....
.....

2. A programme with an employment creation focus has three projects with expenditures and labour intensity listed in the table below.

Project	Expenditure (R)	Labour Intensity (%)
A	1,000,000	10
B	480,000	30
C	1,000	50
Total		

a) What is the Labour Intensity % for the overall programme?

Hint: you will need to calculate expenditure on wages for *each* project first.

.....
.....

b) If the wage rate is R130 and the programme duration is 180 days, how many WOs were created from the programme?

.....
.....

c) If Project B has 100 WOs and a wage rate of R150, how many FTEs did it create?

Hint: You will need to calculate the duration of Project B first.

.....
.....

2.9 Task Rate

The task rate can be defined as the amount of work that can be completed by *one worker for one day of work*, according to a defined quantity and quality.

Task rates are determined through controlled work studies involving a number of people working in varied conditions on an activity for eight hours, over a reasonable time period. After allowing for real working conditions, the average productivity of such a work study is set as the task rate.

For example, a project requires the movement of 30,800m³ of medium-hardness soil and the task rate for this work has been determined to be 3.5m³.

This means that one worker should reasonably be able to move 3.5m³ of soil in *one working day*. This can also be referred to as 'productivity'.

If we know the quantity to be moved and the task rate, we can calculate the number of person days.

We will look more closely at the task system of remuneration in the next session.

Example:

An example of calculating person days using the task rate is given below.

$$\text{Persondays} = \frac{\text{Quantity}}{\text{Task Rate}}$$

In this formula, the quantity is divided by the task rate to give an indication of how many worker days are needed for this task.

Once we know the number of worker days, we can make other calculations, such as WOs and FTEs, using the equations we practised earlier.

2.10 Exercise 2d: Calculating WOs, FTEs Using Wage Rate and Task Rate



Exercise 2d: Calculating WOs, FTEs using Wage Rate and Task Rate

Work in groups of six to eight (the same as for exercise 2c) to calculate the answers to the following questions based on what you have learned in this session.

1. A public body is considering implementing either Project A or Project B. The following data is available:

Project A	Project B
Estimated unskilled labour cost = R30 million	Trench excavation of 655,500m ³
Planned wage rate R150 per day	Productivity of 3m ³ per day per person (task rate)

a) Which of the two projects will yield higher FTEs?

Hint: Calculate number of person days first.

.....
.....

b) What wage rate should Project B pay to achieve the same estimated unskilled labour cost as Project A?

Hint: Use the number of person days for Project B calculated in Question a.

.....
.....
.....

c) If Project B is implemented over a duration of nine months, how many WOs will the project create?

.....
.....
.....

2.11 Target Setting—WOs and FTEs

As mentioned earlier, WO and FTE are key parameters used to measure the success of employment creation for EPWP projects.

For example, the overall target for EPWP is 5,177,911 WOs over five years, with 1,690,128 of these WOs coming from the infrastructure sector. The overall target for FTEs in this period was 2,115,705 WOs, with 529,411 of these FTEs coming from the infrastructure sector.

These target figures can be broken down further across sectors, years, and spheres of government. To achieve these targets, individual projects must reach targets for WOs and FTEs. Targets can be set using the following:

- Scope of work—using technical information about a project during the design stage, such as quantities and task rates, to estimate WOs and FTEs. This method can be used for any operation. For example, excavation, bush clearing, plastering, painting, sealing/surfacing, masonry, walling and installation. It is the most accurate and preferred method.
- Norms—using data, history and experience. This method is used in planning.
- Budget—using budget information about project funds available for labour to estimate FTEs and WOs (Treasury). This method is used for high-level planning.
- ‘Thumb suck’—using guesswork, unrealistic targets. This method is discouraged.

Example: Estimating WOs and FTEs from Scope of Work

How many FTEs and WOs are created in the construction of a concrete wall with the following specifications:

Dimensions: L = 15,000m / H = 3m / W = 0.25m
Quantity (V): = L x H x W = 15,000 x 3 x 0.25 = 11,250m³
Task Rate: = 0.75m³ per Worker Day (that is, per person per day)

Remember that:

$$\text{Persondays} = \frac{\text{Quantity}}{\text{Task Rate}}$$

Using this equation, we can estimate the worker days for this project:

$$\text{Worker days} = 11,250\text{m}^3 / 0.75\text{m}^3 = 15,000 \text{ person days}$$

Now we can use this number to calculate the FTEs for the project.

Remember that:

$$\text{FTE} = \frac{\text{Person days}}{230}$$

Using this equation, we can estimate the FTEs for this project:

$$\text{FTEs} = 15,000 / 230 = 65.21 \text{ FTEs}$$

To calculate the WOs, we need to know the duration of the wall construction

If say, Duration = 3 months (calculate as $3/12 \times 230$)

Remember that:
$$FTE = \frac{WO \times \text{duration(days)}}{230}$$

Using this equation, we can estimate the WOs for this project:

$$WO = (65.21 \times 230) / \{(3/12) \times 230\} = 260.84 = 260 \text{ WOs}$$

OR

$$WO = (FTE \times 230) / \text{duration (days)}$$

Example: Estimating WOs and FTEs from Budget

How many FTEs and WOs are created in a project with the following conditions:

Conditions: Every R1 million in the project budget must create three FTEs

Project Budget: R544 million

Project Duration: 1.5 years

Based on the above conditions, the project must create 544×3 FTEs, which is **1,632 FTEs**.

Remember that:

$$FTE = \frac{WO \times \text{duration(days)}}{230}$$

Using this equation, we can estimate the WOs for this project:

$$WOs = (1632 \times 230) / (1.5 \times 230) = 1,088 \text{ Work Opportunities}$$

OR

$$WO = (FTE \times 230) / \text{duration (days)}$$

However, the scenario will be different if the project is required to create **2,500 WOs**. This means the project's duration will be shorter, as more workers will be needed to complete it in a shorter amount of time. More workers = more WOs.

What will the adjusted duration of the project be to meet the new WO target?

Remember that:

$$FTE = \frac{WO \times \text{duration(days)}}{230}$$

Using this equation, we can estimate the duration for this project:

$$\text{Duration} = (1632 \times 230) / 2,500 = 150.14 \text{ days}$$

OR

$$\text{Duration} = (FTE \times 230) / WO$$

2.12 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- EPWP e-learning course, Module 3, Chapter 1: Performance Indicators
- Guidelines for the Implementation of LI Infrastructure Projects under the EPWP (3rd edition, 2015, or the latest edition of the same)
- The prevailing EPWP Business Plan, DPWI

Session 3: Task System and Productivity

Session Objectives:

By the end of this session, participants will be able to:

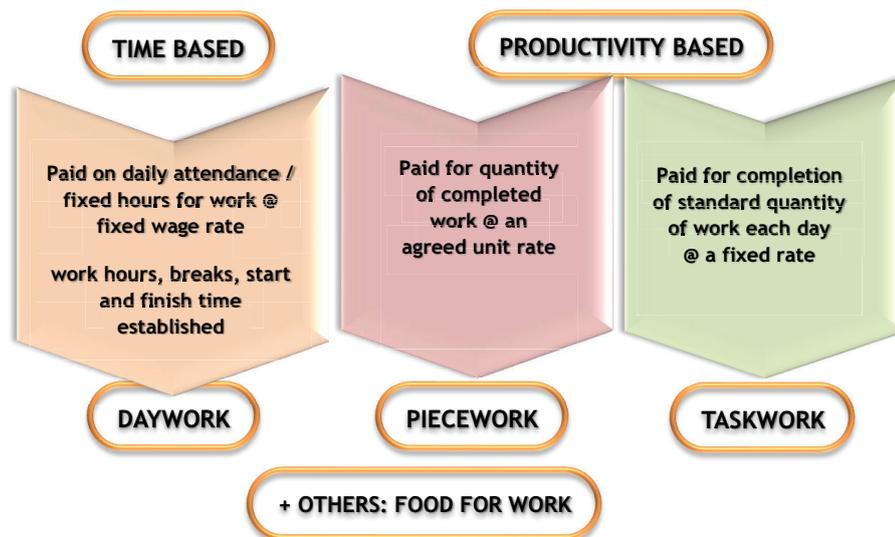
- Identify the task remuneration system as a preferred system of remuneration within the EPWP used to enhance productivity demonstrate application of the task system in the design and planning of EPWP projects
- Demonstrate application of the task system in the design and planning of EPWP projects



3.1 Task Work Explained

- A task is a clearly defined quantity of work that a worker must complete to a specified quality for payment of one day’s fixed standard wage. The main incentive is that the worker can go home after finishing the task.
- The task work system often needs to be clarified in relation to other remuneration systems. Below are three common remuneration systems: Task work, piece work, and time-based.
- While payment for both task and piece work is productivity-based (based on output), the time-based worker is paid for the time spent at work without no relation to the output.
- The task work system is the main system of remuneration used in EPWP LIC projects.

3.2 Diagram 2: Two Fundamental Systems of Remuneration



3.3 Table 5. Time-Based vs Productivity-Based Systems

	Time-Based Worker is paid based on time present at work.	Productivity-Based Worker is paid based on how much he or she produces.	
	Daily Paid	Piece Work	Task Work
Principle	Worker is paid a fixed sum each day for working fixed number of hours that day. Start, breaks and finish times are established.	Worker is paid based on small quantities of output. No time fixed to accomplish task.	Worker is paid a fixed task rate for a fixed output over an estimated time, say six hours.
Advantages	Simple to organise and easy bookkeeping.	Maximises output.	Where a task is set properly, it allows a typical worker to finish early.
Disadvantages	Strong supervision required for high output. Progress can be variable.	Can lead to self-exploitation (overworking oneself at the expense of an individual's health). Can be difficult to administrate.	Close supervision in daily task assignment. Improper task setting can lead to exploitation.

Source: ILO Technical Brief No. 1, adapted from 'Employment Intensive Infrastructure Programmes: Labour Policies and Practices'. ILO

3.4 Questions for Discussion



Questions for Discussion

Discuss the following questions in twos or threes and share your ideas in plenary.

- *Have you ever been employed on a task-work basis? If yes, what were some of the advantages and disadvantages of this system as a worker?*
- *Have you ever had to manage/supervise workers employed on a task-work basis? If yes, what were some advantages and disadvantages based on your experience?*

3.5 Important Considerations for Using the Task Work System



A daily wage rate must be set, and a realistic/fair task rate must be set, that considers local conditions.

- The worker must understand what the expected daily task is.
- The completed task needs approval from the supervisor before the worker is released. Upon completion, the worker is free from the day's work.
- Protection against abuse: when productivity-based remuneration is used, ensure that workers and their representatives understand the wage rate, task system and task rates.
- Not applicable where the task is difficult to measure, such as supervision and watchmen duties.
- The worker must be released and paid after working effectively for normal working hours.

3.6 Factors Affecting the Productivity of Workers

Tools

- Wrong tool for the wrong job
- Condition of tools
- Quality of tools

Condition

- Unforeseen soil condition
- Climatic condition

Task rate

- Wrong task rate applied
- Understanding of task system

Task

- Task incorrectly set out on ground (human error)
- Effort

Human

- Psychological needs
- Motivation
- Skill and experience
- Health condition

3.7 Questions for Discussion



Questions for Discussion

Discuss the following questions in twos or threes and share your ideas in plenary.

- *Which of the factors affecting productivity listed above are the most important?*
- *As a group, choose the three most important factors and identify why you think they are the most important.*

3.8 How to Set a Task Rate from a Work Study

Without applicable guidelines on task rates, a task can be set from a work-study.

- Set aside one week to trial the activity. Organise the workers on a day-work basis for this activity.
- Ensure close supervision and that workers work efficiently for an eight-hour period, including breaks.
- Stop work after eight hours and measure the quantity of work.
- Divide the completed quantity by the number of workers on the activity.
- The average over a one-week observation period gives a task rate for that activity for a day of effective work hours (exclusive of breaks).
- Repeat the work study frequently and adjust the task rate so that the most efficient workers can complete their task after 75% (six hours) of normal working time and the rest within normal working time (eight hours).
- During the work study, do not give workers an indication they are being observed/timed, as this may skew the results.

Example:

A supervisor wants to set a task rate for an excavation task for soil of medium hardness. A group of five workers is organised to conduct this activity over a one-week period.

On Day 1, after 8 hours of work (minus breaks), the group had excavated 16.5m³ of soil. The task rate was calculated as follows:

$$\text{Task Rate} = \frac{\text{Total work completed in effective working time}}{\text{Number of workers on activity}}$$

So:

$$\text{Task Rate} = \frac{16.5\text{m}^3}{5} = 3.3\text{m}^3$$

The task rates for Days 2 to 5 were recorded as:

Day 2 = 3.4m³, Day 3 = 3.2m³, Day 4 = 3.4m³, Day 5 = 3.2m³

The average task rate for the week is calculated as follows:

$$\text{Average task rate} = \frac{(3.3 + 3.4 + 3.2 + 3.4 + 3.2)}{5} = 3.3\text{m}^3$$

The average estimated task rate is 3.3m³ and an acceptable range for the activity will be between 3m³ and 3.5m³ for soil of medium hardness.

3.9 Table 6. Productivity Comparison

This column shows the acceptable task work range for excavation tasks with different types of soil. For example, for hard/very dense soil, a worker would be expected to excavate an amount of between 0.98m³ and 2.94m³ per day.

Table E1 : Productivity data for excavation by hand			
MATERIAL TYPE	EXCAVATION ONLY m ³ /MANDAY		
	DAILY PAID	TASK WORK	PIECE WORK
Soft/very loose soil	1.67 – 5.00	3.34 – 10.00	6.67 – 20.00
Firm/loose soil	1.04 – 3.13	2.09 – 6.26	4.17 – 12.50
Stiff/compact soil	0.75 – 2.25	1.50 – 4.50	3.00 – 9.00
Very stiff/dense soil	0.60 – 1.79	1.19 – 3.57	2.38 – 7.14
Hard/very dense soil	0.49 – 1.47	0.98 – 2.94	1.96 – 5.88
Soft rock	0.42 – 1.25	0.84 – 2.51	1.67 – 5.01

Source: Derived Table from World Bank (in Coukis, 1983:180 & 284)

Source: *Labour-based Methods and Technologies for Employment Intensive Construction Works*, a CIDB guide to best practice

3.10 Table 7. Sample Indicative Daily Rates per Person

ACTIVITY	UNIT	TASK RATE RANGE	REMARKS
Bush clearing	m ²	200 - 350	
Clearing & Grubbing	m ²	100 - 150	
Stump removal	No.	Day work	Depends on size
Boulder removal	No.	Day work	Depends on size
Excavation			
Soft/loose soil	m ³	2.0 - 4.0	
Medium	m ³	2.0 - 3.0	
Stiff/Hard	m ³	1.0 - 2.0	
Very hard	m ³	0.8 - 1.0	

Source: ILO LIC Orientation Training Materials

Note that for the stump removal and boulder removal tasks, these are counted as 'day work', as it is difficult to measure the tasks (it depends on the size of the boulder or stump).

3.11 Important Considerations for Task Rates

- The supervisor sets a task that the workers or teams agree with. Once the work is complete, the supervisor checks and records it. The supervisor must be competent at correctly using the task rate methodology, as it affects productivity in terms of quantity and quality.
- A task is never paid in multiples or ratios as it corresponds to a day's work. If a worker cannot complete a task, s/he is eligible for the day's wage, but the supervisor must take remedial measures to ensure every task is completed. Only after establishing that the task is fair may a consistently underperforming worker be laid off.
- This method does not allow more than one task per day or setting a task that can only be completed in more than a day. A task equals one day's work, and payment is based on the daily wage rate.
- Specific factors to be considered include:
 - The effort required to undertake the work, e.g., soil hardness/wetness, bush thickness, material throwing distances, and lifting heights
 - Using the correct hand tool for the job and the condition of the tools, e.g., tools in good condition and ergonomically designed tools, yields better productivity, allowing a relatively higher task to be set
 - Weather conditions such as rainfall, temperature and humidity
 - The fitness/health of the workers and their work experience
 - Socio-culture of the local people

Remedial Measures for a Fair Task

- If a worker fails to complete a task, observe for three days. They may be underperforming if they consistently fail while others complete the same task on time.
If a group fails to complete a task, swap the task to another group. If they perform the task easily, the first group may be colluding to underperform
- If most workers consistently fail to complete a task even after swapping different groups, or if they finish the task sooner than 75% of the normal working time, it is likely the task is not set appropriately.

Task Work and Inclement Weather

- If work is stopped and workers released, they shall be paid as if it is completed.
- If work is stopped temporarily, and the Site Agent deems it possible to complete it, they shall complete it.
- If workers are informed (in advance) not to come to work the following and/or subsequent days, they shall not be paid for days not worked.

3.12 Task Setting—Team Balancing

- All activities should be balanced to ensure:
 - Safety
 - No activity or team is in each other's working space
 - No activity is delaying another activity
 - Ease of construction and supervision
- Depending on the nature of the activities, workers are sometimes grouped in teams. It can be easier to set out team tasks than individual tasks.
- Some activities are done concurrently. Some are done independently or in series.
- It is more straightforward to adjust the number of people working in a group than it is to change the quantity of work.

3.13 Task setting—Checklist of Questions to Ask

- What are the activities that must be completed?
- What are the prevailing site conditions, such as terrain hardness/difficulty?
- What quantities of work will be carried out in each activity?
- Can the activity be implemented most effectively as an individual or group task?
- Is the activity organised in a simple format that can be instructed, understood, executed, and completed within a day?
- What are the suitable productivity norms (guidelines on individual output capability) to be used?
- What is the sequence of carrying out these activities?
- Overall, can resources be planned and utilised to the optimum?



3.14 Task System Challenges and Solutions

- Non-preference and non-implementation of the task system, owing to a fear of future work and lack of understanding of the system.
- Timely payment of wages is voted as the most important aspect for keeping work going and workers happy.
- Social facilitation is primarily used to ensure a buy-in for the task system.
- Task Systems included in Contracts and Guidelines should be customised to local conditions.
- Do not play a 'game of chance' by introducing a task system in the middle of a project using the time-based system, as it may lead to labour unrest.

3.15 Exercise 3: Video—EPWP Technical Objectives



Exercise 3: Video—EPWP Technical Objectives



Your trainer will guide you in this activity to illustrate some of the concepts presented in this session.

Your trainer will show you a short EPWP Technical Objectives video. This video talks about some of the infrastructure projects implemented by EPWP and the technical details involved.

The video shows some different activities carried out by workers. Some of these can be considered task-based work, while others might be suitable as time-based work.

1. Watch the video and note all the different work activities you can see people doing. Also, note what these activities are.
2. When the video is finished, work with another person and compare your notes.
3. For each activity you have identified, discuss whether you think the activity would be suitable as a task-based or a time-based activity. Note this down, as well as the reasons for your choices.
4. Discuss in plenary to see what the wider group thinks. Your trainer will make a list of everyone's ideas.

3.16 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- Technical Brief 1. Task System, ILO/DPWI.
- Guidelines for the Implementation of Labour-Intensive Infrastructure Projects Under the EPWP (3rd edition), 2015 (or its latest edition).
- CIDB Labour-based methods and technologies for employment intensive construction work - a CIDB guide to best practice.
- Guidelines for Costing Labour Based Road Works, ILO/DPWI.

Session 4: Overview of EPWP Implementation Guidelines for LI Infrastructure Projects

Session Objectives:

By the end of this session, participants will be able to:

- Identify the key sections of the EPWP Implementation Guidelines for Labour-Intensive Infrastructure Projects that are relevant to their work
- Apply relevant elements of the EPWP Implementation Guidelines within their work environment

4.1 What are the EPWP Implementation Guidelines?



The EPWP Guidelines for Implementation of Labour-Intensive Infrastructure Projects (referred to here as the EPWP Implementation Guidelines) provide a guiding framework for implementing LI projects under the EPWP.

This session provides an overview of some of the key sections of the document, which can later be referred to in full for important additional details.

The guidelines cover the following areas:

- Identification of suitable projects
- Appropriate design for LI construction and maintenance
- Specification of LI works
- Compilation of contract documentation for LI projects
- Contract clauses must be included to amend or augment standard documentation for implementing LI projects
- Overarching EPWP principles
- EPWP cross-cutting issues

Some of the above areas have already been covered in this Learner Manual.

The sections of the guidelines covered in this session include:

- Responsibilities of the public body (Section 4 of the guidelines)
- Contract documentation for consulting engineers/contractors (Section 5 of the guidelines)
- Planning and implementation checklist (Section 6 of the guidelines)
- Reporting (Section 7 of the guidelines)
- Cross-cutting issues (Section 3 of the guidelines)

4.2 Responsibilities of the Public Body

This is covered in the Infrastructure Sector Guidelines. In the context of EPWP, a ‘public body’ refers to a department, state-owned entity, constitutional institution, municipality, public entity or municipal entity. These public bodies have a number of responsibilities in implementing EPWP LI projects, listed in Table 5 below.

4.3 Table 8. Responsibilities of the Public Body

Responsibility	Description	More Information
Selection of Projects	<ul style="list-style-type: none"> Only certain types of infrastructure projects can be implemented using LI methods. 	<ul style="list-style-type: none"> Appendix B of the EPWP Implementation Guidelines provides a full list of operations and the relevant specifications.
Large Projects	<ul style="list-style-type: none"> A large project is an infrastructure project with a value of more than R30 million (including VAT) that involves the use of LI methods on a significant scope of work, to maximise the creation of WOs. Large projects can be singular or an aggregation of smaller projects, culminating in a monetary value of at least R30 million. Large projects should be designed and packaged to promote participation of small to medium term contractors. 	<ul style="list-style-type: none"> n/a
Setting of rate of pay	<ul style="list-style-type: none"> The public body must set a rate of pay not less than the minimum EPWP rate as stipulated in the Ministerial Determination, for workers to be employed on EPWP projects. This is in accordance with the Code of Good Practice for Employment and Conditions of Work for the EPWP. More detail on setting the rate of pay and relevant principles will be covered in Session 5. 	<ul style="list-style-type: none"> As per the Code of Good Practice, task rates are applicable with recommended rates as shown in Appendix G of the EPWP Implementation Guidelines.
Appointment of Consulting Engineers / Project Managers and Contractors	<ul style="list-style-type: none"> Ideally, everyone involved in the implementation of EPWP projects should be competent in LIC and/or maintenance as necessary. 	<ul style="list-style-type: none"> Appendix C of the guidelines provides an overview of the required skills programmes for the relevant personnel involved in EPWP projects.

Participants' Training	<ul style="list-style-type: none"> Public bodies should ensure that participants employed on their EPWP projects receive accredited training whenever possible. This may be done through the submission of training applications to the relevant Regional Office of the DPWI. 	<ul style="list-style-type: none"> Personnel from the National DPWI or Provincial Coordinating Department EPWP units will assist the public body to prepare and submit the training applications to relevant regional office of the DPWI or to any other funders such as SETAs.
Monitoring and Reporting	<ul style="list-style-type: none"> Public bodies must ensure effective monitoring of the LI activities and reporting of EPWP projects on the EPWP reporting system. 	<ul style="list-style-type: none"> For effective project monitoring, the Compliance Checklist provided in Appendix F is recommended for use by public bodies.

4.4 Contract Documentation for Consulting Engineers/Contractors

This is covered in **Section 5** of the Guidelines. The Implementation Guidelines outline how contract documentation should be handled for LIC. The EPWP requirements can then be included in the Service Level Agreement (SLA).

! **Appendix E1 and E2** in the Implementation Guidelines provide the templates for consulting engineers/contractors. Public bodies shall use:

E1. EPWP Project Design Compliance Declaration—as a guide for agreements for consultants responsible for designing

E2. EPWP Project Supervision Compliance Declaration—as a guide for project managers supervising the implementation of Labour-Intensive works

These templates can be found in **Appendix E** of the EPWP Implementation Guidelines for LI Infrastructure and in the reference material accompanying this Learner Manual.

Section 5 of the current EPWP Infrastructure Sector Guidelines for labour-intensive construction includes the following:

- 5.1 General
- 5.2 Documentation for Professional Services Contracts
- 5.3 Contract Documentation for the Works
- 5.4 Labour Issues
- 5.5 Generic Labour–Intensive Specification
- 5.6 Bill of Quantities

5.1 General

It is important to note the following:

- All the general contracts listed in the CIDB Standard for Uniformity in Construction Procurement may be used for LI projects
- It is not necessary to create new contracts, or to amend the approved contracts to implement Labour-Intensive works

- Any requirements for LI works need to be established in the scope of works, special conditions of contract and specifications associated with contract documentation
- The approved standard forms of contract for professional services use different terms to describe the parties to the contract. The Implementation Guidelines use the terms employer and consultant for the parties engaged in professional service contracts and scope of work for requirements in *both* professional service and construction/maintenance contracts

5.2 Documentation for Professional Services Contracts

- No additional cost to design LI projects.
- Staff must be competent in LI methods.
- The consultant must collect specific information from the contractor and submit it to the client (employment, assets etc.).
- Before certifying a contractor's payment certificate, the contractor must ensure that they have submitted labour information in the format and timeframe specified by the employer. If this information is inadequate, the consultant should not submit the certificate for payment of the relevant outputs.

5.3 Contract Documentation for Works

- Applicable standard contract documents will apply, incorporating specific EPWP/LIC conditions and specifications.
- EPWP documents and projects should be branded according to the latest Corporate Identity Manual, obtainable from www.epwp.gov.za.

5.3.1 Notice and Invitation to Tender/Conditions of Tender

- Public bodies must only award contracts to contractors who have demonstrated that (if awarded) they will employ suitably qualified senior and middle supervisory staff to oversee the LI works during the contract's validity.
- The tender notice must also specify the minimum number of expected WOs.
- In addition, the following text must be included in the notice and invitation to tender.

"Only tenderers who can demonstrate that they will have in their employ staff which satisfy EPWP requirements during the contract validity are eligible to submit tenders".

5.3.2 Contract Data

The following must be included in the contract data in the contract with the employer:

- *Payment for the LI component of the works*
- *Payment for works identified in the Scope of Work as being LI shall only be made according to the contract's provisions if the works are constructed strictly according to the provisions of the Scope of Work. Non-payment for such works shall not relieve the contractor, in any way, from his/her obligations either in contract or in delict*

Linkage of payment for LI component of works to submission of project data:

The contractor's invoices should include labour information for the corresponding period in a format specified by the employer. If the contractor chooses to delay submitting payment invoices, labour returns should still be submitted at a frequency and timeframe stipulated by the employer. The contractor's invoices shall not be paid until all pending labour information has been submitted.

Applicable labour laws:

The current Ministerial Determination (downloadable at www.epwp.gov.za), EPWP, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice, shall apply to works described in the scope of work as being labour-intensive and which are undertaken by unskilled or semi-skilled workers.

5.3.3 Scope of Work

- The following wording, as appropriate, must be included in the scope of work in the contract with the contractor.

DESCRIPTION OF THE WORKS

1. Employer's objectives

The employer's objectives are to deliver public infrastructure using labour-intensive methods per EPWP guidelines.

2. Labour-intensive works

Labour-intensive works shall be constructed/maintained using local workers who are temporarily employed in terms of the scope of work.

3. Labour-intensive competencies of supervisory and management staff

Contractors shall only engage supervisory and management staff in labour-intensive works that have completed the skills programme, including foremen and supervisors at NQF level 4 "National Certificate: Supervision of Civil Engineering Construction Processes" and Site Agent/ Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent QCTO qualifications (See Appendix C) at NQF outlined in Table 1.

5.4 Labour issues

The following sections elaborate on key considerations of the Code of Good Practice for EPWP:

5.4.1 Requirements for the sourcing and engagement of labour

Unskilled and semi-skilled labour required for executing all LI works shall be engaged strictly in accordance with prevailing legislation, per the Code of Good Practice for EPWP and the EPWP Standard Recruitment Directives.

5.4.2 Training of targeted labour

1. The contractor shall provide all the necessary on-the-job training to targeted labour to enable such labour to master the basic work techniques required to undertake the work following the contract's requirements in a manner that does not compromise worker health and safety.

2. Accredited training should ideally be provided before commencement or during project implementation.

3. The cost of accredited training for targeted labour will be funded through various sources such as the National Skills Fund from the Department of Higher Education and Training, funds from the implementing public body, funding from Sector Education and Training Authorities (SETAs), etc. This training should take place as close to the project site as possible. The public body implementing the project must ensure that training applications are made by its relevant project manager assisted by relevant training officials from the National Department of Public Works and Infrastructure.

4. The public body must ensure that training is more technical than life skills. In addition, the public body is required to maximise opportunities for participant training carried out before project implementation.
5. The public body must ensure that workers who have received training are placed on work assignments after the training.
6. If a provisional sum for training is made in the contract, the contractor shall pay an allowance equal to 100% of the daily wage rate to workers who attend accredited training.

5.6 Bills of Quantities

LI works must be highlighted in the bill of quantities for payment items relating to LI works. The following wording should be included, as appropriate, in the pricing instructions and in the bills of quantities in the pricing data:

1. Those parts of the works to be constructed using LI methods should be marked in the bill of quantities with the letters LI either in a separate column or as a prefix or suffix against every item so designated (as illustrated in the table below). The works, or parts of the works so designated, are to be constructed using LI methods only. The use of a plant to provide such works, other than a plant specifically provided for in the scope of work, is a deviation from the contract. The items marked with the letters LI are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not override any of the requirements in the generic LI specification in the Scope of Works.

2. Where minimum labour intensity is specified by the design the contractor is expected to use their initiative to identify additional activities that can be done labour-Intensively to comply with the set minimum labour intensity target.

3. Payment for items designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless constructed using labour-Intensive methods.

Any unauthorised use of the plant to carry out work which was to be done Labour-Intensively will not be condoned, and any works so constructed will not be certified for payment.

Example:

DESCRIPTION		UNIT	QUANTITY	RATE AMOUNT	
ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
33.07LI	Removal of unsuitable material (including free-haul to 0.5km)	m ³			

4.5 Planning and Implementation Checklist

This is covered in **Section 6** of the Implementation Guidelines, which guide the design of LI works. A list of questions/considerations for the design of LI works is provided in the guidelines.

Refer to **Annex 2**, at the end of your Learner Manual for this list, which will be explored more closely in the exercise for this session.

4.6 Reporting

This is covered in **Section 7** of the Implementation Guidelines which covers the reporting requirements for LI infrastructure projects under EPWP. All EPWP projects must be registered, and progress reports must be submitted according to agreed formats and timeframes.

! **Appendix H** of the EPWP Infrastructure Guidelines for labour-intensive construction provides forms that are recommended for use by public bodies, consultants and contractors implementing the EPWP. These include the following:

H.1A: NATIONAL / PROVINCIAL REGISTRATION FORM

H.1B: MUNICIPAL REGISTRATION FORM

H.2A: NATIONAL/PROVINCIAL SUBMISSION FORM

H.2B: MUNICIPAL SUBMISSION FORM

H.3: PROGRESS REPORT FORM (NATIONAL, PROVINCIAL AND MUNICIPAL)

H.4: PARTICIPANTS INFORMATION (NATIONAL, PROVINCIAL AND MUNICIPAL)

4.7 EPWP Cross-Cutting Issues

This is covered in **Section 3** of the Implementation Guidelines, which considers key cross-cutting issues arising in the EPWP, as summarised below.

Cross-cutting issues can be defined as topics that affect all aspects of a programme (that is, they ‘cut across’) and therefore need special attention. They should be integrated into all stages of programmes and projects, from planning through to impact assessment. Some examples of current cross-cutting issues in many development programmes include gender, climate change, and Covid-19.

4.8 Cross-Cutting Issues—Convergence

Convergence refers to fostering synergies within and among sectors and programmes of the EPWP to avoid duplication. The rationale for convergence is that it will:

- Build synergies within EPWP
- Reduce programme duplication and overlap
- Reduce the potential for duplicate reporting of the same work opportunities
- Achieve maximum benefits in the implementation of projects by aligning sectors and programmes within sectors.

Areas of convergence in EPWP include:

- Recruitment and selection—in accordance with the standard EPWP recruitment procedures
- Payment of stipends and wages—all sectors to pay at least the EPWP minimum wage
- Convergence between and among sectors—e.g. joint planning and pooling of resources
- Convergence between and among programmes within the same sector e.g. uniform norms and standards
- Business process convergence—e.g. planning, financing, reporting, branding

4.9 Cross-Cutting Issues—Green Jobs

- Jobs are understood as being ‘green’ when they help reduce negative environmental impact or contribute positively, ultimately leading to environmentally, economically and socially sustainable enterprises and economies.
- Green jobs are also decent (ILO, 2015) jobs that provide adequate incomes, and social protection and ensure workers’ rights are respected.
- Green jobs can cover a variety of employment, ranging from jobs that improve energy and raw materials efficiency, limit greenhouse gas emissions, minimise waste and pollution, protect and restore ecosystems, and support adaptation to the effects of climate change.

EPWP Examples of Green Jobs Interventions

Green Buildings

- Retrofitting using green materials
- Thermal Insulation to reduce energy demand, solar energy system
- Rainwater harvesting and storage, water saving devices

Roads Infrastructure (Construction & Maintenance)

- Drainage structures and protection works using natural/locally based resources
- Appropriate choice of technology and construction materials
- Non-motorised transport infrastructure e.g. sidewalks and cycle lanes
- Slope and gully protection e.g. grassing, use of local rock materials

Water

- Stormwater management infrastructure, water harvesting infrastructure

Energy

- Renewable energy e.g. solar, wind, wave, hydro
- Efficient lighting (new construction and retrofitting)

4.10 Cross-Cutting Issues—Sustainable Livelihoods

- A ‘livelihood’ comprises the capabilities, assets (including material and social resources) and activities required for a means of living.
- A livelihood is ‘sustainable’ when it can cope with, and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future without undermining the natural resource base. It is not just about the means to survive, but the capability to thrive.

In EPWP, sustainable livelihoods are supported:

- During participation in the programme, for example, through income earned
- Post participation, for example, skills acquired from the programme can be used for future employability and/or entrepreneurship initiatives

EPWP promotion of the following components of infrastructure are essential for sustainable livelihoods:

- Secure shelter and buildings
- Adequate water supply and sanitation
- Clean, affordable energy
- Access to information (communication infrastructure)
- Affordable transport

4.11 Exercise 4: Group Work–Checklist Analysis



Exercise 4: Analysis of the ‘Design of LI Works’ Checklist

Your trainer will guide you in this activity, which aims to explore further the considerations required when designing LI works.

Your trainer will ask you to work in small groups of three to four people.

In your groups, you will need to refer to Annex 2. Checklist for Design of Labour-Intensive Works at the end of this Learner Manual. Read the checklist of questions/considerations and discuss the following:

1. Choose the five most critical questions/considerations in your group’s opinion and give a reason why it has been chosen.
2. Do your group think any other questions/considerations should be included in this list? What are they?
3. Share your experience—have you ever been involved in, or do you know of, an LI works project where some of these things have not been considered in the project’s design? What happened and why?

You will share your responses with the wider participant group in plenary.

4.12 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resource:

- Guidelines for the Implementation of Labour-Intensive Infrastructure Projects Under the EPWP (3rd edition), 2015, or its latest edition.

Session 5: Interventions at different stages of the Project Cycle

Session Objectives:

By the end of this session participants will be able to:

- Explain the different stages of the EPWP infrastructure project cycle
- Identify the roles of stakeholders in LIC at the different stages of the project cycle
- Apply the required LIC activities at the relevant stages in the project cycle

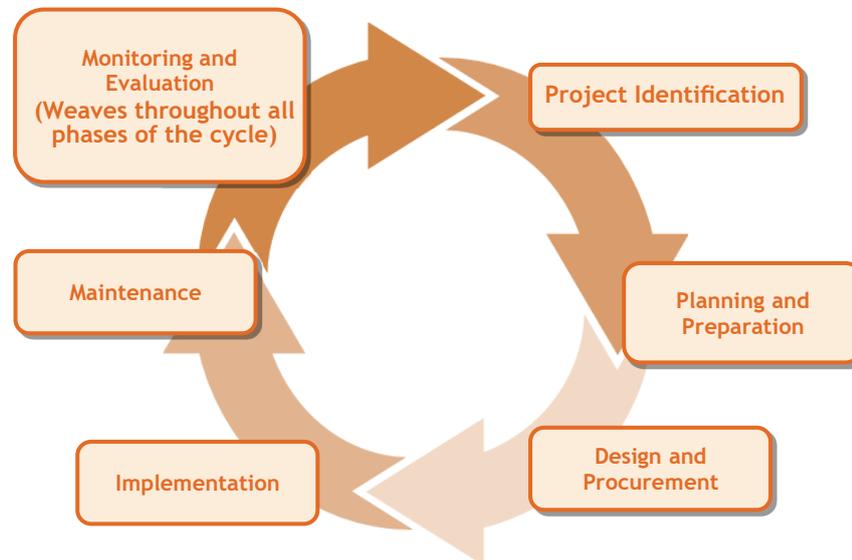
5.1 What is the EPWP Infrastructure Project Cycle?



- Most infrastructure projects, including those implemented through EPWP follow sequential and complementary phases of a project cycle:
 - Project identification
 - Planning and preparation
 - Design and procurement
 - Implementation
 - Maintenance
- Weaving through all the phases is the Monitoring and Evaluation phase to assess if things are progressing as planned and if not, to take corrective measures.
- The success of an LI infrastructure project depends on appropriate actions taken during all phases of the project. For example, identifying a project that is not amenable to the use of labour, and planning and designing it for implementation using equipment and then trying to change it to be implemented using labour would not lead to success.
- A project that is intended to create employment should be identified, planned, designed and implemented and maintained with use of labour as a primary resource.
- There are other actions that need to happen in parallel to the phases identified above, such as advocacy, institutional arrangements, reporting, training and capacity development.
- Implementation of the recommendations presented in this session can lead to more employment creation, whilst optimising the productivity of the workers, improving the quality of infrastructure assets and longer-term impact on service delivery.

Source: *Technical Brief No. 3: EPWP Infrastructure Project Management Cycle, DPWI/ILO.*

5.2 Diagram 3. The EPWP Infrastructure Project Cycle



5.3 Exercise 5: Phases of the Project Cycle



Exercise 5: Presenting the Phases of the Project Cycle

Your trainer will ask you to work in groups, each of which will be assigned *one* phase of the project cycle. You will need to:

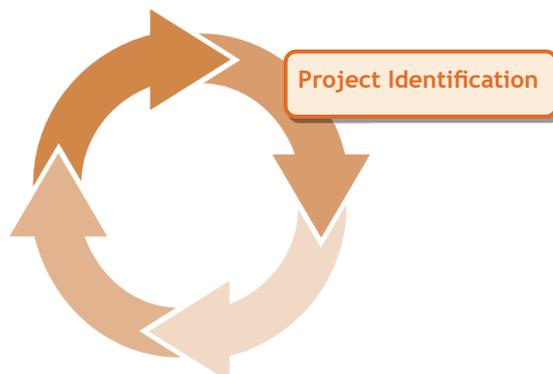
1. Read the information about your assigned phase in the Learner Manual
2. Prepare a summary of the key points from your phase, which needs to include a selection of the key activities and roles of the main stakeholders
3. Present your summary in plenary (1-2 mins)

It is recommended that one person per group is nominated to write the summary, and one person is nominated to present the summary

All group members should contribute by reading the information and identifying the key points that must be presented

Through the process of this exercise, you will be ‘teaching’ your fellow learners, so try to make your presentation interesting and engaging!

5.4 Diagram 4. The Project Identification Phase



Key Activities of this Phase:

- Ensure that projects selected as EPWP projects are amenable to LI methods; that is, the work can be carried out by labour as a primary resource, supplemented by equipment for activities where labour is not practical or cost-effective.
- Labour-intensive components should be identified if a large project (typically valued at more than R30 million at 2017 prices) is selected.
- Choose projects in areas where labour is readily available within the project vicinity—preferably within walking distance (typically within a 5km radius), to avoid the workers arriving at the site tired or the costs of daily labour transportation or site camping.
- Ensure adequate management capacity (skills set in competence and numbers) to oversee the projects' planning, design and implementation.
- Set applicable wage level, considering EPWP benchmark and local economic dynamics.

Do not design the project to use LI methods before verifying the availability of a suitable labour force living within walking distance, the technical feasibility of the works, and the availability of management capacity to oversee their implementation.

5.5 Diagram 5. The Planning and Preparation Phase



Key Activities of this Phase:

- Public bodies should decide (based on their capacity and policies) what work can be done in-house and what should be outsourced.
- If you use a service provider, develop terms of reference to ensure compliance with EPWP Implementation Guidelines. Also ensure that internal officials and service providers understand their roles.
- Public bodies should know what outputs they expect before signing agreements with external service providers.
- For EPWP projects, outputs will often be physical assets and employment creation. Skills upgrading and technology transfer could be added benefits.
- Identify the appropriate technology for the various activities.
- Develop a balanced portfolio of projects throughout the financial year. This means having ongoing projects at different stages throughout the year, and investing in both construction *and* maintenance, based on the level of infrastructure development in the area.
- Key Performance Indicators: Establish baselines and develop business plans that address employment targets.

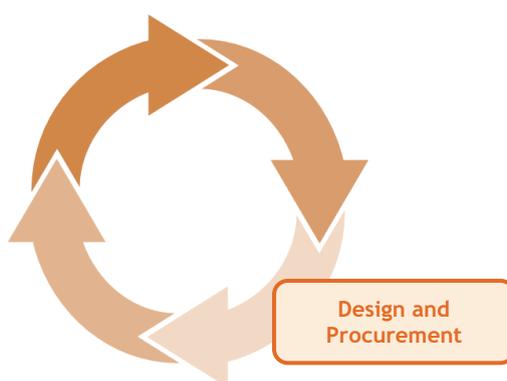
5.6 Table 9. Key Stakeholders in the Project Identification, Planning and Preparation Phases

Stakeholder	Role
Implementing Bodies (Municipalities, Provincial Departments, National Departments, State Owned Enterprises)	<p><i>Stakeholder consultation and communication</i></p> <ul style="list-style-type: none"> • Consult all relevant stakeholders and role players for buy-in and understanding of their respective roles. • Establish clear communication channels for stakeholders, and dispute resolution mechanisms. <p><i>Community needs and projects identification</i></p> <ul style="list-style-type: none"> • Identify and prioritise community needs and EPWP projects through a consultative process. • Set guidelines and procedures for projects in line with EPWP requirements. <p><i>Alignment of objectives and planning</i></p> <ul style="list-style-type: none"> • Ensure that projects are aligned with government objectives and operational procedures (e.g. labour policies and practices, supply chain). • Develop and secure approval and funding of annual business plans with clear employment targets and other deliverables. • Identify project sites and ensure environmental impact assessments are properly conducted as necessary.
Consultants (where public body has inadequate capacity to carry out these functions)	<ul style="list-style-type: none"> • Feasibility studies on behalf of implementing bodies. • Preparation of the business plan on behalf of the implementing bodies.

National Department of Public Works and Infrastructure (DPWI)	<ul style="list-style-type: none"> • Overall EPWP coordination role, including reporting by implementers. • Develop EPWP policy. • Set national targets. • Establish business plans and set standards and guidelines with lead sector departments and engage with Treasury on overall EPWP funding.
Beneficiaries (including demographic groups: gender / youth / persons with disabilities)	<ul style="list-style-type: none"> • Buy-in and support EPWP Projects. • Indicate needs of project participants and community needs.

Source: Summarised from Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO. A full list of stakeholders and roles is in this Technical Brief.

5.7 Diagram 6. The Design and Procurement Phase



Key Activities of this Phase

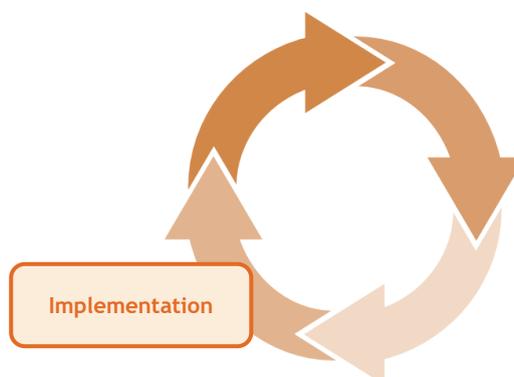
- Public bodies should assign or hire design tasks to project managers or service providers competent in LI methods.
- Deliberately design work components, methods, and choice of construction materials with the aim of overall optimisation of employment on the project.
- Include appropriate/particular specifications for LI activities. Standard specifications are generally biased towards the use of machines.
- Include relevant LI clauses in contract documents. For example, activities earmarked for use of LI methods should be annotated as such in the BoQs.
- Set realistic LI targets based on activities that can be done labour-intensively and appropriate productivity norms for the type of work.
- Estimate the number of WOs that can be created by the project, in relation to the envisaged project duration.
- Cost estimates must be based on realistic wage rates and prices of other resource inputs.
- Develop/adapt means for measuring physical output for quantity and quality. If a service provider is awarded a contract based on a target LI, there should be means to deal with non-compliance.

5.8 Table 10. Key Stakeholders in the Design and Procurement Phase

Stakeholder	Role
Implementing Bodies (Municipalities, Provincial Departments, National Departments, State Owned Enterprises)	<ul style="list-style-type: none"> Establish the scope of the projects. Design projects ensuring compliance with EPWP requirements (including estimation of employment creation potential, optimising LI). Prepare bidding/contract documents. Ensure input of all relevant stakeholders. Prepare Business Plan incorporating EPWP requirements. Budget allocations for future Monitoring and Evaluation and impact assessment of the project. Manage tendering processes (advertise, adjudicate, award contract) according to supply chain management procedures. Risk analysis. Appoint service providers. Maintain a database of service providers. Identify relevant beneficiaries and train those who need it prior to implementation. Issue tenders for technical support, mentorship, and training.
Consultants (if design work is being outsourced)	<ul style="list-style-type: none"> Assemble professional team with competency in LI methods. Establish the scope of the projects and specifications. Design projects ensuring compliance with EPWP requirements (including estimation of employment creation potential, optimising LI). Evaluate risks. Prepare contract and tender documents, compliant with EPWP requirements. Prepare cost estimates. Prepare evaluation reports and provide recommendations to client.
National Department of Public Works and Infrastructure (DPWI)	<ul style="list-style-type: none"> Assists with alignment of projects to EPWP guidelines. Enhance design and implementation capacity of public bodies.
Beneficiaries (including demographic groups: gender / youth / persons with disabilities)	<ul style="list-style-type: none"> Provide feedback on proposed design solution.

Source: Summarised from Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO. A complete list of stakeholders and roles is included in this technical brief.

5.9 Diagram 7. The Implementation Phase



Key Activities of this Phase

- Implement the appropriate wage level that has been set within the EPWP Guidelines. In general, an appropriate wage rate complies with the following principles:
 - A fair wage for a fair day's work
 - Not too low to be exploitative
 - Not too high to attract labour from other sustainable initiatives
- Optimise labour productivity by assigning appropriate tasks and applying task-based and time-based remuneration systems. Task-based workers should be released after completing their daily tasks.
- Ensure the workers have safe working conditions according to the Department of Employment and Labour Regulations.
- Consider the impact of tool quality and ergonomics on productivity. Using inappropriate tools may lead to poor productivity and safety/health problems.
- Labour balancing as the project progresses is an essential consideration in project implementation. It is common to either:
 - Choose the target project duration (and then employ the required number of workers) OR
 - Choose a target number of work opportunities to create (with little emphasis on project duration)

Either way, as the project progresses, the number of workers may need to be increased, decreased, or reassigned to other activities. The project manager should be competent at optimising labour requirements as the project progresses.

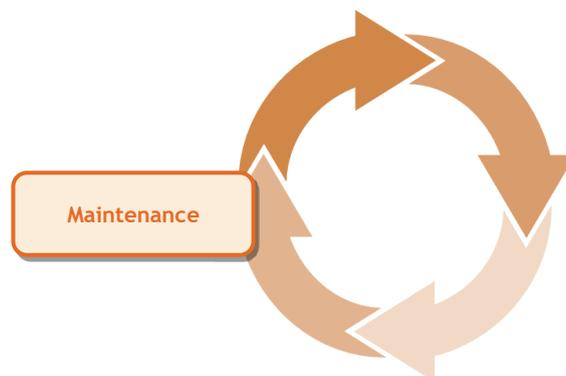
- Some projects (e.g. those targeting poor families) allow the substitution of a worker for a family member to ensure income continuity to the household. If this is permitted, ensure the insurance covers the substitutes for work-related injuries and that they are doing their work.
- Reporting on project indicators should follow agreed-upon formats and timeframes to feed into the national statistics: disaggregate physical outputs and employment creation by gender and age group. As a contractual requirement and to ensure consistency, reporting should be tied to (made part of the submission) monthly payment certificates.
- Completed projects should be handed over to those responsible for maintaining the created assets.

5.10 Table 11. Key Stakeholders in the Implementation Phase

Stakeholder	Role
Implementing Bodies (Municipalities, Provincial Departments, National Departments, State Owned Enterprises)	<ul style="list-style-type: none"> • Set up project steering committee. • Monitor implementation progress. • Pay service providers. • Ensure compliance with labour policies and regulations (e.g. fair and transparent recruitment, minimum wage, signed contracts for beneficiaries, timely payment of beneficiaries and service providers). • Comply with Occupational Health and Safety requirements. • Report progress (e.g. employment, services, assets, expenditure, demographic data, training) through Department of Public Works and Infrastructure EPWP reporting systems. • Carry out technical audits to verify compliance with EPWP requirements. • Maintain a record of information for auditing purposes. • Prepare final payment certificate. • Ensure safety of assets. • Exit strategy for beneficiaries. • Prepare and hand out certificate of service to beneficiaries. • If appropriate inform the media about the hand-over ceremony (e.g. invite media, issue press release). • Acceptance and ownership of the final product.
Consultants	<ul style="list-style-type: none"> • Supervise implementation of projects and ensure compliance with EPWP requirements. • Collect EPWP data from service providers and submit to client. • Amend designs as necessary. • Quality assurance. • Certify payment certificate on behalf of client. • Provide technical support to implementing bodies. • Prepare final payment certificate. • Prepare as-built drawings and documentation. • Submit Close-out Report to client
National Department of Public Works and Infrastructure (DPWI)	<ul style="list-style-type: none"> • Overall coordination of the EPWP. • Report progress (work opportunities, services and assets created) to cabinet. • Conduct programme impact assessments.
Beneficiaries and Community (including demographic groups: gender / youth / persons with disabilities)	<ul style="list-style-type: none"> • Provide labour. • Acquire skills and enhance chances for future employability. • Comply with labour legislation (e.g. UIF contribution, Occupational Health and Safety). • Access to use of assets. • Protection of community assets.

Source: Summarised from Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO. A full list of stakeholders and roles is included in this technical brief.

5.11 Diagram 8. The Maintenance Phase



Key Activities of this Phase

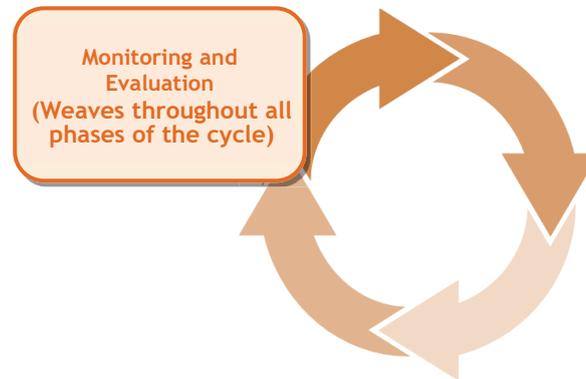
- Maintenance of created assets should be considered a priority.
- A maintenance plan based on an asset management regime is needed. To preserve assets and effectively enhance labour intensity, ensure an optimised portfolio of different types of maintenance (periodic and routine).
- Decide on the maintenance delivery option—which kind of maintenance model suits your needs to achieve the required output and labour intensity:
 - Length-person system? (Contractors hired to maintain a fixed portion of the infrastructure)
 - Contractors who hire local labour?
 - In-house maintenance units?
 - Community?
- Decide based on payment, such as level of service agreements or measurement of quantities against a schedule of rates.
- Plan, cost, and ensure funding for maintaining the asset at the beginning rather than the end of the project.

5.12 Table 12. Key Stakeholders in the Maintenance

Stakeholder	Role
Implementing Bodies (Municipalities, Provincial Departments, National Departments, State Owned Enterprises)	<ul style="list-style-type: none"> • Put in place a sustainable maintenance programme (expertise, funding, community liaison structure) for the assets. • Skill beneficiaries to be part of maintenance teams. • Ensure compliance with agreed service level objectives. • Sourcing maintenance funds. • Maintenance of the assets.
Beneficiaries (and Community)	<ul style="list-style-type: none"> • Utilisation of assets. • Payment for services/maintenance if necessary. • Report damages to relevant structures. • Maintenance of the assets. • Share knowledge they gained concerning the project. • Form SMME's/ Cooperatives to maintain assets.

Source: Summarised from Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO. A full list of stakeholders and roles is in this Technical Brief.

5.13 Diagram 9. The Monitoring and Evaluation Phase



Key Activities of this Phase

- Monitoring and Evaluation are not just about collecting employment creation data. They should also be carried out throughout the project. For example, before the project starts, the emphasis may be on establishing the baseline situation and setting performance targets.
- During implementation, the emphasis may be on assessing whether progress is going as planned and, if not, suggesting corrective measures. For example, if one project spends four times as much as a similar project to create one FTE, the project manager may interpret that as a warning of inefficiency by the more expensive project. The measure of a project's success is ensuring its completion within the project's cost, time, and desired quality standards.
- Regular monitoring results in the preparation of reports on key performance indicators (KPIs), which analyse the following key parameters and their relationships:
 - Wage rate
 - Task rates
 - Work opportunities
 - FTEs or worker-years - worker-days
 - Work duration
 - Labour intensity
 - Cost/FTE and cost/work opportunity
- After project completion, the emphasis may be on assessing the project's impact. Infrastructure projects tend to have immediate (post-construction) and longer-term (several years after completion) impacts. The longer-term impact is often in the utility of the infrastructure asset and the employment of workers to maintain it. Therefore, the effect goes well beyond the employment numbers.
- It is important to take appropriate actions during all phases of the project cycle to deliver the project on time at an acceptable cost and the desired quality.

5.14 Table 13. Key Stakeholders in the Monitoring and Evaluation Phase

Stakeholder	Role
Implementing Bodies (Municipalities, Provincial Departments, National Departments, State Owned Enterprises)	<ul style="list-style-type: none"> Evaluate the project and produce associated reports. Conduct impact assessments of projects and disseminate to relevant stakeholders. Document lessons learned to inform future projects.
Beneficiaries (including demographic groups: gender / youth / persons with disabilities)	<ul style="list-style-type: none"> Share lessons learned to inform future projects. Share experience about project impact.

Source: Summarised from Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO. A complete list of stakeholders and roles is in this Technical Brief.

5.15 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- Technical Brief No. 3: EPWP Infrastructure Project Management Cycle, DPWI/ILO.
- Technical Brief No. 4: Roles of Stakeholders during the various stages of the EPWP project cycle, DPWI/ILO.

Session 6: EPWP Recruitment Guidelines, Ministerial Determination, Code of Good Practice, Social/Community Facilitation and Labour Issues

Session Objectives:

By the end of this session participants will be able to:

- Identify the EPWP Recruitment Guidelines as the guiding document for employment of workers in EPWP LIC projects
- Explain the importance of social/community facilitation to EPWP LIC projects, and how it can be integrated
- Apply the EPWP Recruitment Guidelines, Ministerial Determination, Code of Good Practice and Social/Community Facilitation to the recruitment and management of labour during EPWP LIC projects

6.1 What are the EPWP Recruitment Guidelines?



- The EPWP Recruitment Guidelines were approved by the Minister of Labour in 2017 to ensure a clearly defined recruitment process for EPWP projects that uphold the following principles:
 - Workers are to be recruited through a fair and transparent process
 - Adherence to the EPWP minimum wage
 - Work provides or enhances public goods and/or community services
 - Compliance with minimum LI appropriate to a particular sector
- The Recruitment Guidelines aim to overcome some of the earlier challenges of EPWP recruitment, including:
 - Patronage in the recruitment of participants
 - Inconsistency in the process of recruiting participants
 - Lack of transparency
 - Poorly defined criteria and process of recruitment
- The Purpose and Objectives of the Recruitment Guidelines are as follows:
 - Ensure uniformity across all sectors in the process of recruitment of participants
 - Provide guidance in the selection process
 - Eliminate unfair and biased practices
 - Provide a fair, transparent, equitable, non-unambiguous process
 - Guide EPWP stakeholders on their roles and responsibilities

6.2 Exercise 6: Video—EPWP Recruitment Guidelines Drama



Exercise 6: Video—EPWP Recruitment Guidelines Drama, 'Bridging Equality'



- Your trainer will show you a video which illustrates some of the problems that can happen when the EPWP Recruitment Guidelines are not followed.
- Watch the video and discuss the following in plenary:
 - a. Which of the Recruitment Guiding Principles were *not* being followed by Councillor Nkalakatha? Give examples. (See Table 14 below)
 - b. What do you think was the outcome of the recruitment process for the bridge building project in the two communities?
 - c. Have you ever experienced a situation where there was OR was not a fair recruitment process? What happened and why?

6.3 Table 14. Key Recruitment Guiding Principles

Principle	Description
Fairness	<ul style="list-style-type: none"> • The process should have a predictable methodology that affords equal opportunity to targeted community members (refer to Code of Good Practice for EPWP). • The process shall not be manipulated for gain or to discriminate on the basis of colour, tribe, place of birth, ethnic or social origin, language, social status, religious belief, political affiliation, opinion, custom, culture, sex, gender, marital status, pregnancy, disability, economic or social status (refer to Constitution of RSA 1996).
Equity	<ul style="list-style-type: none"> • Potential EPWP participants shall be given equal access regardless of their background to enable full and active participation in all aspects of the programme.
Transparency	<ul style="list-style-type: none"> • Target community members shall be afforded opportunity to witness and participate in the entire recruitment process.
Accountability	<ul style="list-style-type: none"> • Persons managing the recruitment process shall be answerable to relevant stakeholders for their actions.
Ethics	<ul style="list-style-type: none"> • All persons involved in the recruitment process shall conduct themselves in a manner that demonstrates professional integrity. • Ethical behaviour shall include: <ul style="list-style-type: none"> ○ Avoidance of conflict of interests ○ Devoid of personal gain ○ Devoid of undue favours
Respect for the Environment	EPWP stakeholders should endeavour to sustain the environment for the benefit of future generations.
Commitment	Nurturing and protecting the wellbeing of the individual, family, communities and the nation through diligent execution of EPWP programme.

Source: EPWP Recruitment Guidelines, DPWI, 2017.

6.4 Key Issues to be Considered in the Recruitment of EPWP Participants

- **Roles and responsibilities:** Each public body is responsible for recruiting and selecting EPWP beneficiaries on each project (See Table 15 below).
- **Responsive to EPWP Legislative Requirements:** Code of Good Practice and the Ministerial Determination.
- **Community participation in planning processes:** Before the initiation of an EPWP project, the target community shall be mobilised to set up a committee for representation at various phases of the project.
- **Wage Determination:** The public body shall set the wage level before recruiting participants so that participants are not paid less than the EPWP minimum wage and not more than prevailing wages for similar work in the project area.

6.5 Table 15: Roles and Responsibilities of Stakeholders in the EPWP Recruitment Process

Stakeholder	Responsibilities
National Department of Public Works and Infrastructure (DPWI)	<ul style="list-style-type: none"> • To develop strategic documents (in this instance recruitment strategies) to assist in the implementation of the EPWP. • To conduct workshops on the implementation of the guidelines. • To ensure alignment of the existing EPWP municipal policies to the Recruitment Guidelines. • To conduct evaluation assessments on the impact of the Recruitment Guidelines. • To develop mechanism to monitor compliance with the Recruitment Guidelines.
Provincial DPWI	<ul style="list-style-type: none"> • To provide support of the roll-out of the guidelines within the province. • Utilise existing coordination structures to ensure progress in the implementation of the guidelines. • To identify areas of concern with regard to the implementation and communicate them to the national DPWI. • To ensure that the social facilitation and induction workshops on the Recruitment Guideline Principles are undertaken. • To ensure that the recruitment process is undertaken in partnership with the community. • To ensure wage rates comply with the minimum EPWP rate—the rate must be communicated prior to recruitment.
Municipalities	<ul style="list-style-type: none"> • Must ensure that the recruitment of EPWP participants is aligned to the Recruitment Guidelines. • To ensure that during the facilitation process, the communities are made aware of the recruitment process to be followed, the Ministerial Determination and the Code of Good Practice. • To sensitize the relevant community structures on the recruitment process and EPWP Recruitment Guidelines. • A process of redress must be outlined before the commencement of the recruitment process.

Source: EPWP Recruitment Guidelines, DPWI, 2017.

6.6 What is the Ministerial Determination and Code of Good Practice?



- The Ministerial Determination and Code of Good Practice are two documents which give authority to the EPWP Recruitment Guidelines.
- The Recruitment Guidelines are issued in terms of the Ministerial Determination 4: EPWP Ministerial Determination (Notice 347) as appeared in Gazette No. 35310, 4th May 2012, and the Code of Good Practice (Notice No. 129), as published in Gazette No. 34032, 18th February 2011.
- The Minister of Labour decides to replace or exclude basic conditions of employment provided for in the Basic Conditions of Employment Act (BCEA).
- Ministerial Determination No. 4 applies to employees engaged in EPWP programmes, although it does *not* apply to those in supervisory or management positions. This includes the Infrastructure Sector Programmes and projects, including the construction and rehabilitation of infrastructure such as roads, stormwater drains, water reticulation systems, and more.
- The Minister of Labour issued and gazetted a Code of Good Practice for Special Public Works Programmes, which guides stakeholders in EPWP regarding working conditions and ministerial determination. This determination establishes basic conditions of employment in a particular sector or area. The Minister may also determine the rate of pay and disciplinary and grievance procedures. The code further promotes a common set of good practices and minimum standards in employment practices among the different EPWP sub-programmes.

6.7 What Parts of BCEA Does the Ministerial Determination Cover?

The Sections of the Basic Conditions of Employment Act (BCEA) covered by the Ministerial Determination are:

S10(2): Overtime rate (Task-based)

S14(3): Remuneration required for meal intervals of longer than 75 mins

S29(n) to (p): Written particulars of employment

S30: Display of employee's rights

S37: Notice of termination (Fixed term contracts)

S41: Severance pay (Fixed term contracts)

S51-58: Sectoral Determinations

The Varied Conditions in the Ministerial Determination are as follows:

Normal Hours of Work (task-based): A task-rate worker may not work more than a total of 55 hours in any week to complete the tasks allocated (based on a 40-hour week).

Meal Breaks: A worker may not work more than 5 hours without a meal break of at least 30 minutes. An employer and worker may agree on longer meal breaks.

Weekly Rest Period: Every worker must have two days off per week.

Minimum Wage: A worker may not be paid less than the prevailing EPWP minimum wage rate per day or per task. This is adjusted annually in line with the prevailing inflation rate.

Termination: A fair procedure must be followed. There is no severance pay. However, current proposed amendments to the Labour legislation may have an impact down the line. The worker will qualify for UI benefits on termination by the employer.

- The employer may terminate a worker's employment for good cause after following fair procedures
- A worker is not required to give notice to terminate employment. However, a worker who wishes to resign should advise the employer in advance to allow the employer to find a replacement
- A worker who is absent for more than three consecutive days without informing the employer of an intention to return to work OR who does not attend training events without good reason will have terminated the contract. However, the worker may be re-engaged if a position becomes available

6.8 The Code of Good Practice

The Code of Good Practice is designed to assist with implementing the Ministerial Determination, and the two must be read in conjunction. It provides guidelines on working conditions, rates of pay and disciplinary and grievance procedures.

The Code of Good Practice promotes uniformity, applies to all employers and employees in EPWP, and is in line with all relevant legislation:

- BCEA: Basic Conditions of Employment Act
- LRA: Labour Relations Act
- EEA: Employment Equity Act
- OHSA: Occupational Health and Safety Act
- COIDA: Compensation for Occupational Injuries and Diseases Act
- UIA: Unemployment Insurance Act
- SDA: Skills Development Act

The Code of Good Practice identifies the beneficiaries of EPWP as:

- Locally based (as close as possible) and prepared to work on a specific EPWP project
- Spread benefits, that is, one person per household
- At most, 20% of skilled employees come from other communities
- Proposed targets:
 - 60% women
 - 55% youth (18–35 years old) as defined by the law or regulations
 - 2% persons with disabilities (means people who have a long-term or recurring physical or mental impairment which substantially limits their prospects of entry into, or advancement in, employment)

Areas covered by the Code of Good Practice include:

- Selection and participation
- Payment
- Discipline and grievance
- Disciplinary sanctions
- Health and safety
- Compensation for occupational accidents and diseases
- Normal hours of work
- Sick leave
- Maternity leave
- Family responsibility

These areas are outlined in more detail in **Annex 4: Description of Areas of the Code of Good Practice** at the end of this Learner Manual.

6.9 Setting Rates of Pay

The following principles should be considered when setting rates of pay for workers:

- The rate set should consider wages paid for comparable unskilled work in the local area per sector, if necessary
- The rate should be an appropriate wage to offer an incentive for work, reward effort provided, and ensure the desired quality of work
- It should be the average local rate at most to ensure people are not recruited away from other employment and jobs with longer-term prospects
- Men, women, persons with disabilities and the aged must receive the same pay for work of equal value
- The minimum wage is reviewed annually in November of each year. The review is based on inflation, and the new wage rate is announced six weeks before it becomes effective

In addition to the minimum wage, there are provisions for a maximum wage limit, as per the EPWP Reporting System (EPWP-RS) Circular 2 of 2021: EPWP Maximum Wage. The purpose of the circular is to guide all EPWP implementing bodies on reporting of participants paid above the daily maximum wage of **R500** per day.

6.10 What is Social Facilitation?

Social facilitation/community facilitation is becoming an increasingly critical component of implementing any EPWP LIC project.

We can think of social facilitation as:

- **An act of active community mobilisation and participation for the well-being of socio-economic endeavours**
- **An ongoing process involving different people and institutions pursuing common objectives**
- **An appreciation and recognition of the genuine participation of the affected people for sustainable development**
- **Enabling people to organise for collective action through a pool of resources and building solidarity on common problems**

In other words, it is about engaging with and bringing the local communities involved in the projects on board for better project outcomes.

6.11 Why is Social Facilitation Important?

Social facilitation is important for the following reasons:

- To mobilise communities around programmes and projects for their support and participation
- To champion the establishment of community-based institutions to support development programmes
- To empower community members to participate actively and assume ownership of their development
- To create an enabling environment for effectively implementing development initiatives or projects at the community level
- To facilitate networking and partnership establishment to maximise the impact of the programmes

This ensures that the communities are not just passive partners in the programmes implemented in their area but are actively involved in shaping how they look and how the community can participate.

6.12 Forms of Social Facilitation

Two forms of social facilitation are identified below:

1. Community-Based Planning Facilitation (CBPF)

- Applicable/relevant for community or ward-based plans
- Full participation of local community members at village/ward level
- Participants identify development priorities and opportunities
- Local resources are enhanced and harnessed towards development support processes

Output: Integrated Based Plan

2. Project Based Facilitation:

- Participants' involvement is specific to a particular project
- Applied to a specific project, as per client directive
- Distinct from CBPF—no need to identify the community

Output: guaranteed participation and benefits by participants at community or surrounding communities.

6.13 EPWP and Social Facilitation

The role of community facilitators in EPWP projects:

- Share information about the project to community members through its structures in collaboration with government departments and municipalities
- To assist and provide guidance on establishing Project Steering Committees (PSCs) as the project's administrative structure
- Assist and provide inputs in recruiting the community liaison officer (CLO)
- In collaboration with the contractor and through the CLO, provide information on local SMMEs
- Through the PSC and CLO, assist in recruiting local labourers in line with government policy directives, e.g. EPWP Recruitment Guidelines

EPWP community facilitator role/s:

- Prepare communities for the uptake of EPWP projects
- Conduct project site visits
- Conduct public body visits
- Conduct inductions across all EPWP parties
- Assist in data management support (collection)

Legislative framework underpinning social facilitation in EPWP projects:

- SA Constitution (Act 108) recognises the importance of engagement or participation by citizens and non-citizens for efficient governance
- The Constitution promotes an enabling environment that encourages participatory processes through consultations, open dialogues, debates and discussions without fear of alienation.
- Chapter 14 of NDP (Vision 2030) on nation-building and social cohesion promotes citizen participation in various forums (e.g. IDP, SGBs, CPFs)
- MSA ensure community participation, consultation and provision of basic services to communities

Common Challenges for Social Facilitation in EPWP Projects

- Lack of or inadequate social facilitation before the project starts
- Political interferences (local forums)
- Poorly designed projects (excluded EPWP components)
- Project stoppages

6.14 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- EPWP Recruitment Guidelines, DPWI 2017
- Ministerial Determination 4: Expanded Public Works Programmes, Department of Labour, 2012
- Code of Good Practice for Employment and Conditions of Work for Expanded Public Works Programmes, Department of Labour, 2011
- EPWP Reporting System (EPWP-RS) Circular 2 of 2021: EPWP Maximum Wage
- PowerPoint presentation: Community Development Facilitation for EPWP Projects For LIC/Social Facilitation Workshop

Session 7: EPWP Monitoring, Evaluation & Reporting

Session Objectives:

By the end of this session, participants will be able to:

- Explain the importance of M&E for the EPWP programme
- Identify the key information required for EPWP reporting

7.1 What is the purpose of M&E in EPWP?

- The National DPWI is responsible for the Monitoring and Evaluation (M&E) of the EPWP programme. The vision for M&E of the EPWP is as follows:

“To efficiently gather information about the performance of EPWP programmes/projects, to monitor and report implementation progress and evaluate the impact of the programme on the participants, households and their communities.”

- The National DPWI is responsible for consolidation, validating analysis, and reporting achievements against set targets.
- The implementing public bodies are responsible for project implementation, verification of project information, and reporting to the EPWP Reporting System (EPWP-RS). <https://epwprs.dpw.gov.za>
- The following key indicators should be included in the information reported:
 - Project information
 - Participants’ information (including name, ID number, and contact details)
 - Employment information (including daily wages paid, days worked)
 - Training information
 - Enterprise development formation
 - Financial information (project budget and expenditure)
 - Implementing body information
 - Project output information

The EPWP M&E framework defines reporting and evaluation protocols for the EPWP. Every quarter, EPWP performance is monitored and publicly announced through various forums. The EPWP and its sub-programmes are also constantly evaluated through case studies, cross-sectional surveys and longitudinal studies.

Source: EPWP Phase IV Business Plan 2019-2024, EPWP website www.epwp.gov.za

7.2 Table 16: M&E Plan for EPWP

Technique	Implementation	Areas measured	Timeframes
Process Evaluations	Process evaluations of the implementation of projects and programmes in different sectors.	Implementation in accordance with prescribed guidelines, requirements and conditions. Extend compliance at different stages of the project cycle, determine efficacy of implementation.	Year 2 and 4
Surveys, including baselines, cross-sectional and longitudinal	Surveys of participants, communities and government departments.	Profile of participants and their households, impact of income transfers, impact of assets created, relevance and quality of training, role of contractor (targeting, training, e.t.c.), community perceptions on the benefit of the project.	Year 1, 3 and 5, at the end of the project cycle
Case Studies and Completion Reports	In-depth studies of selected projects by researchers, spread across sectors and provinces. Assessment of quality of assets and services. Evaluation of the quality of infrastructure and services against accepted benchmarks.	All measurement areas excluding employment prospects of participants after exiting the EPWP. Quality of assets. Implementation process. All forms of infrastructure and services.	Year 1 and 3
Poverty Impact Analysis	Secondary data and data derived from surveys utilised.	Impact of income, participation in work, and assets and services transferred to poor households on poverty and vulnerability.	Year 5

Source: EPWP Phase IV Business Plan 2019-2024,

7.3 Information Sources for EPWP M&E and Reporting

There are several sources of information to help you understand the EPWP M&E and reporting systems. Your trainer will demonstrate some of these in this session, which you can follow up in your own time.

EPWP M&E Reports

<http://www.epwp.gov.za/m&ereports.html>

This section of the EPWP website allows you to view and download all of the previous M&E reports from EPWP, including the most recent FY.

EPWP Reporting System (EPWP-RS)

<http://www.epwprs.dpw.gov.za/kdl/>

The homepage of the EPWP-RS, allows users to login to the system. There are several important templates that can be downloaded from this page, including a user request form and the EPWP Reporting Guideline Document shown below.

Training

<https://epwrstraining.dpw.gov.za>

EPWP Reporting Guideline Document

<http://epwpmun.dpw.gov.za/8180/exist1-4/rest/db/kwantu-resource/kdl/homepageDocuments/Guideline%2520Document%2520on%2520EPWP%2520Reporting.pdf>

This guideline document provides step by step information on how to use the Reporting System, including:

- Key EPWP Indicators
- Data Validation Rules
- Data Flow Diagrams

EPWPRS YouTube Videos

<https://youtu.be/z1HXBDkfEBc>

Short YouTube video showing how to create a project in EPWPRS v2 (5:42)

<https://youtu.be/4L6rGCRX4xg>

How to install a local or offline version of the EPWPRS v2 (3:10)

<https://youtu.be/-yjrTlkXkil>

How the capturer can capture the business plan form on EPWPRS v2 (5:35)

<https://youtu.be/S67bQJOYgjQ>

Localities Participants Monthly Attendance on EPWPRS v2 (13:16)

<https://youtu.be/ATi-aX-20NA>

Registering new participants on EPWPRS v2 (4:33)

7.4 Questions for Discussion

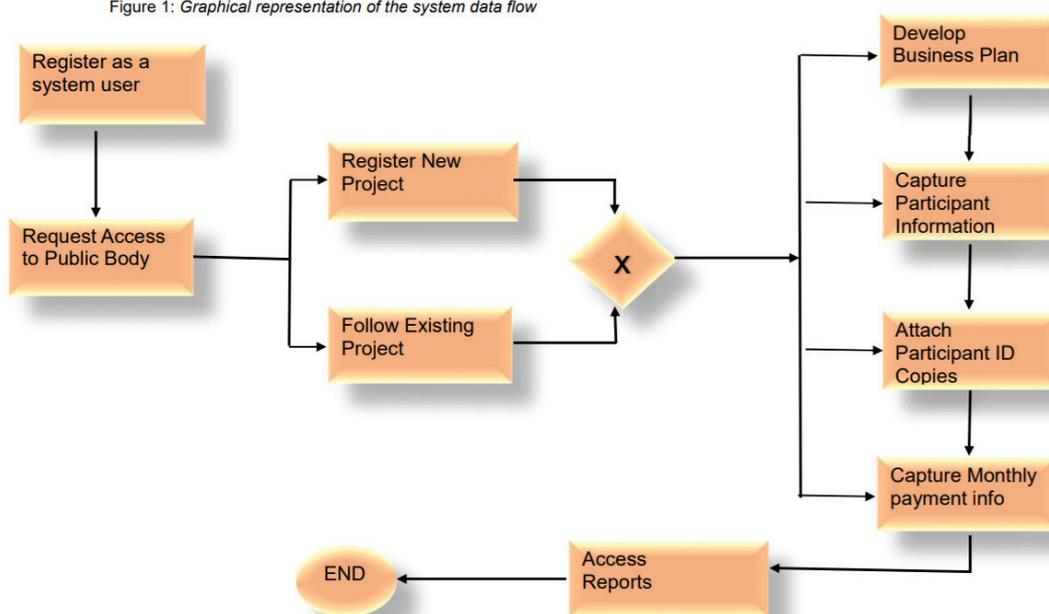
Questions for Discussion

Discuss the following questions in groups of twos and threes and share your ideas in plenary.

- *Have you ever been involved in M&E or Reporting processes for an EPWP project? If so, describe your role and the processes used.*
- *What might be some of the challenges faced when trying to undertake good M&E and Reporting practices? How can these be addressed?*

7.5 Diagram 10. EPWP-RS System Data Flow

Figure 1: Graphical representation of the system data flow



Source: EPWP Reporting Guideline Document, 2017.

Note: Requirements to register as a system user on EPWP-RS v2 were detailed in EPWP-RS Circular 2 of 2019 and include the following:

- All system users are required to register. Previously registered users required to re-register
- To register, an official letter must be obtained on departmental/municipal letterhead, signed and dated by the supervisor, confirming authorisation to capture or view EPWP performance information on the EPWP-RS
- The letter must include the following information:
 - Name and Surname
 - Department
 - Designation

- System Role (See below)
- Email Address
- Contacts
- Supervisor Name and Surname
- Supervisor Designation
- This letter must then be emailed to the system administrator to activate access to the system (epwprs@dpw.gov.za)
- In terms of System Role, there are three different roles, defined below:

Role	Definition
Data Capturer	Person responsible for capturing project information onto the system. Projects are assigned to the Data Capturer by the Project Creator.
Project Creator	Person responsible for registering the project name on the system. S/he will assign the project to a data capturer to complete the project report. The project creator may also be responsible for authorising the project or assign this role to another system user. This role must be assigned to the manager/supervisor of the data capturer for accountability of information captured.
Project Authoriser	Person responsible for the authorising information captured by the data capturer. This person can be the project authoriser and creator, but should not capture the data.

7.6 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- EPWP website: <http://www.epwp.gov.za/m&ereports.html>
- EPWP Reporting System Circular 2 of 2019 (May 2019) Expanded Public Works Programme Registration of System Users on EPWP-RS v2.
- EPWP Phase IV Business Plans. Reporting, Monitoring & Evaluation.
- LIC Orientation Training Course: EPWP 2019-2024, Section 9. Reporting System Version 2.

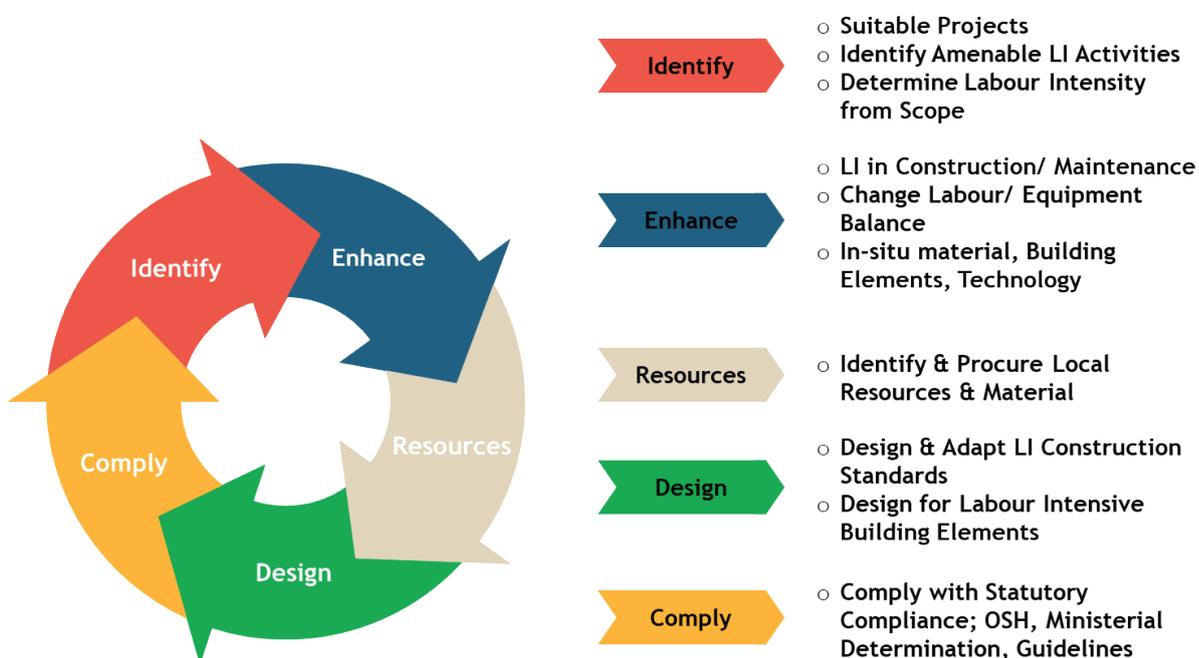
Session 8 : Elective 1 – Design Principles (Roadworks and Buildings)

Session Objectives:

By the end of this session participants will be able to:

- Identify general LI design principles for roadworks and buildings applicable to their work environment
- Influence design undertaken by consultants for LIC

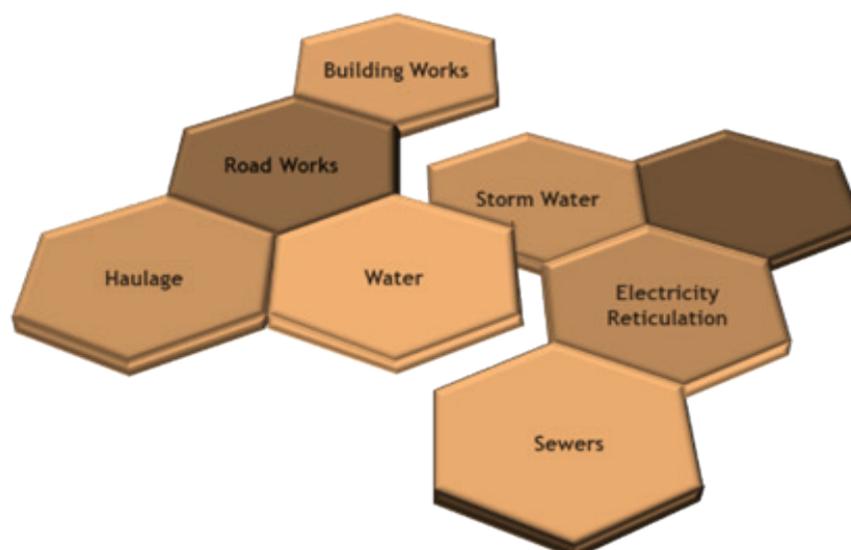
8.1 Diagram 11. Summary of LIC Project Design Principles



Source: ILO LIC Training Materials

- As per the EPWP Implementation Guidelines, the personnel of consultants who are appointed to design EPWP projects should have LIC qualifications:
 - NQF 7 for Design Engineers/Professionals
 - NQF 5 for Site Technicians/Engineer's Representative
- Consultants are involved in EPWP Reporting.

8.2 Diagram 12. What are the EPWP Focus Areas for LIC Projects?



Source: ILO LIC Training Materials

Note: Design principles for water/sanitation and solid waste management projects are covered in more detail in Session 9.

8.3 Table 17. Possible LIC Works for EPWP Projects

Type of EPWP Project	Examples of Possible LIC Works	
Building Works	Site Works <ul style="list-style-type: none"> • Access roads • Walkways • Water reticulation • Wastewater reticulation • Electricity reticulation • Landscaping 	Building Works <ul style="list-style-type: none"> • Foundation trenches • Manufacture of elements on site: trusses, paving blocks, bricks and kerbing blocks
Water & Sanitation	Water <ul style="list-style-type: none"> • Laying of water pipelines • Construction of ferro-cement reservoirs • Excavation for reservoirs • Construction of small masonry reservoirs • Spring and well protection 	Sanitation <ul style="list-style-type: none"> • Sewer inspection chambers • Pre-cast sewer inspection chambers covers
Electrical	Electricity Infrastructure <ul style="list-style-type: none"> • Trench excavation • Excavation for erection of poles for overhead lines • Installation of electricity cables 	

Type of EPWP Project	Examples of Possible LIC Works
<p>Roads & Stormwater Works</p>	<ul style="list-style-type: none"> • Site clearance and grubbing • Formation and side-drains • Layer work construction including loading, hauling (over max. 200m) and spreading material • For higher standards roads: <ul style="list-style-type: none"> ○ Dry/wet macadam base ○ Emulsion bound base; foamed bitumen gravel; emulsion treated gravel; or slurry bound or composite ○ Application of bitumen bound surface treatment (cold) including spreading and dragging of chips ○ Slurry treatments to existing or new road surfaces ○ In-situ concrete roads ○ Segmented block paved roads ○ Cobblestone construction/taxi ranks ○ Road markings ○ Fencing ○ Erection of road signs ○ All routine road maintenance activities ○ Road reserve maintenance ○ Up-scaling in the road ○ Gabions and reno mattresses ○ Drainage structures ○ Cross-drainage/pipe culverts/headwalls ○ Low-level bridges construction ○ Scour checks construction ○ Concrete/stone masonry ditch lining

Source: ILO LIC Training Materials

8.4 What are the General Design Considerations for LIC Projects?

- Select suitable labour-friendly projects
- Optimise earthworks. Consider safety, waterlogging, ELHUS, cut and fill in excavations
- Minimise excavations deeper than about 1.5m and avoid areas with hard rock where possible
- Simplify drawings to suit the target group, for example, use A3 size, aerial photos and convert task rates to linear measures for ease of assignment
- Minimise hauling distances, for example, wheelbarrows (150 to 200m), local transport such as animal-drawn carts (up to 5km)
- Pre-manufactured elements must not exceed 320kg. Prefabricated components incorporated into LI works must be sized so the mass of individual elements does not exceed 320kg for six people to lift it without injury. [Women up to 35 kg, less for pregnant women; men up to 55 kg]
- Hazardous materials must not be handled by untrained/ unprotected workers e.g. lime, lead, asbestos.
- Include as far as possible skills such as masonry (e.g. for inspection chambers), stone masonry (e.g. for elevated pipework) and stone pitching
- Use local skills where feasible and ensure quality tools are available to labourers
- Consider whether the maintenance procedures are labour friendly. Are there opportunities for emerging businesses?
- Consider environmental compliance and OSH requirements
- Determine the scope for green jobs and sustainable livelihoods in the project
- Prompt payment of labourers is critical for a successful LIC project
- Manufacturing considerations e.g. manufacture of and masonry elements on site, manufacture of trusses on site
- Incorporate fly ash in concrete and bricks/blocks, as these are locally available material and easy to handle
- Consider the use of appropriate alternative building materials recommended by *Agrément SA*, e.g. fly ash, cold asphalt mix, etc.

! See also Annex 2. Checklist for Design of Labour-Intensive Works at the end of this Learner Manual.

8.5 Table 18. Further Design Considerations

This table depicts different examples of activities that can be done labour-intensively during construction and/or maintenance. The question mark (?) depicts the activity's suitability for labour depending on the operation.

Activity	Construction	Maintenance
Clearing/Landscaping	✓	✓
Site Roads	✓	✓
Pipework (WatSan)	✓	?
Foundations	✓	✗
Brick/Plaster/Paint	✓	✓
Glazing	?	?
Structural Steel	✗	✓
Roofs/Carpentry	✓ ?	✓ ?
Lighting	✗	✓

Source: ILO Training Materials 'Design Principles'

8.6 Table 19. EPWP Programme Indicators & Minimum LI Targets

Category	Sub-Category	Indicators	Recommended Minimum Range of LI
Buildings	Construction	No., m ²	10-30%
	Maintenance	No., m ²	20-70%
	Landscaping	m ²	40-70%
Roads and Stormwater- High Volume	Construction/ Upgrading/ Rehabilitation	Km., lane-km	10-30%
	Maintenance - Routine	Km., lane-km, m ²	40-90%
	Maintenance - Periodic	Km., lane-km, m ²	15-40%
	Fencing	Km., m	20-50%
Roads and Stormwater - Low Volume	Construction/ Upgrading/ Rehabilitation (Gravel/ Sealed)	Km., lane-km	15-35%
	Maintenance - Routine	Km., lane-km, m ²	70-90%
	Maintenance - Periodic	Km., lane-km, m ²	20-50%
	Non-Motorized Transport/ Sidewalks*(Exclusive of Rehabilitation of Structures)	Km., m ²	15-40%
Stormwater	Construction	Km.	15-30%
	Maintenance	Km	40-90%

Source: ILO Training Materials 'Design Principles'

8.7 Design Consideration in Detail: LIC Project Selection

Projects that are selected and designed as EPWP/LIC should satisfy the following basic criteria and principles:

1. Technically feasible and economically viable
2. Socio-economic conditions, for example, if there is high unemployment and poverty with low (compatible with prevailing wage rates) wage rates in the project area

Note: To prevent unnecessary labour unrest and ensure smooth operation, it is paramount that applicable wage rates are harmonised and regulated across all EPWP projects in a province or region. Note, however, that the cost of living is higher in urban areas

3. “Humane” climatic conditions
4. Availability of labour in the geographical locality. The project location should be in proximity (within about 5km) of large settlements with abundant labour supply

Note: The absence of abundant labour supply within the project vicinity can increase project costs (i.e. transportation and accommodation) and administration

5. Site/terrain conditions and project complexity

The nature and scope of the project should not be too sophisticated and difficult, and should exclude, for example:

- Hard/rocky ground conditions
 - Massive earthworks, which may require heavy machines for road works. LIC is more appropriate and conducive to low-volume roads, upgrading/rehabilitation and maintenance, where traffic levels are less than 250 vehicles per day
6. Availability and use of local materials
 - The design should optimise the use of locally available resources
 - The selection of construction materials during design should emphasise materials that will maximise employment creation during construction
 - Care must be taken in selecting construction materials to ensure quality and durability
 - Consideration should be given to selecting green materials, that do not adversely affect to the environment. For example, stone masonry and grouted stone pitching should be included wherever suitable material is available, to the exclusion of pre-cast or cast in-situ concrete stormwater structures
 - Where there is an indication of local skills (e.g. bricklaying), structures should be designed to make use of such skills

8.8 Table 20. Example of Classroom Construction Analysis (I)

Person Days Generated

Description	Construction of 4 Classroom Block:	Construction of 8 Classroom Block:	Construction of 12 Classroom Block:	Construction of 24 Classroom Block:
Bill No.1: Foundations	155	311	467	930
Bill No.2: Concrete, Formwork	73	146	220	441
Bill No.3: Masonry	770	1,540	2,310	4,620
Bill No.5: Roof Coverings	10	20	31	62
Bill No.6: Carpentry and Joinery		1	1	3
Bill No.7: Ceilings, Partitions	9	18	27	54
Bill No.11:Electrical Work	6	13	20	40
Bill No.12: Glazing	2	1	2	6
Bill No.13:Paintwork	12	26	41	83
Total	1,037	2,076	3,119	6,239

8.9 Table 21. Example of Classroom Construction Analysis (II)

Person Days Generated in Percentage of Total

Description	Construction of 4 Classroom Block:	4-Block % of Total	Construction of 12 Classroom Block:	12-Block % of Total
Bill No.1: Foundations	155	14.9%	467	14.9%
Bill No.2: Concrete, Formwork	73	7.0%	220	7.1%
Bill No.3: Masonry	770	74.3%	2,310	74.1%
Bill No.5: Roof Coverings	10	1.0%	31	1.0%
Bill No.6: Carpentry and Joinery		0.0%	1	0.0%
Bill No.7: Ceilings, Partitions	9	0.9%	27	0.9%
Bill No.11:Electrical Work	6	0.6%	20	0.6%
Bill No.12: Glazing	2	0.2%	2	0.1%
Bill No.13:Paintwork	12	1.2%	41	1.3%
Total	1,037	100%	3,119	100%

8.10 Table 22. Example of Single-Storey House Cost Breakdown

Item	Description	Percentage
1	Excavations and Concrete Foundations	3%
2	Brickwork up to Plinth	5%
3	Superstructure-Brickwork	25%
4	Roofing	20%
5	Flooring	6%
6	Woodwork, doors, windows	15%
7	Internal Finishes	6%
8	External Finishes	3%
9	Water supply	4%
10	Sanitary work	8%
11	Electrical Works	5%
	Total	100%

Source: Tables 20-22 taken from ILO LIC Orientation Training Materials

8.11 Work Activities: Typical Building Project Components

- Preliminary and General:
 - Tools and equipment
 - Temporary buildings
 - Materials and handling logistics
 - Setting out
 - Locating and exposing underground services
- External/Site Works
 - Bulk earthworks
 - Fencing
 - Roads
 - Water supply and wastewater
 - Electricity, including electrical reticulation and street lighting
- Building Works
 - Earthworks, including foundations and foundation beds
 - Concrete, formwork and reinforcement
 - Masonry work, including substructure and superstructure
 - Waterproofing
 - Carpentry and joinery, including roof timbers and trusses, doors, built-in wardrobes, e.t.c.
 - Ironmongery
 - Roof coverings
 - Ceilings, partitions and access flooring, including insulation
 - Metalwork
 - Plumbing and drainage, including roof drainage
 - Electrical works
 - Plastering
 - Floor finishes, including tiling, carpeting, terrazzo
 - Glazing and paintwork

8.12 Table 23 a-d Example Labour Requirements for Building Works

23a. Person Days Generated for Concrete Works

Description	Unit	Qty	Mason (wd)	Workers (wd)
Hand mixing of 1:3:6 cement concrete including hauling and placing by wheelbarrow within 30m	m ³	1	0.35	2.11
Hand mixing only of 1:2:4 cement concrete excluding hauling and placing	m ³	1	0.35	1.05
Transporting, placing and consolidating of concrete within 30m				
- for Foundation and Floors	m ³	1	0.35	1.77
- for Walls	m ³	1	0.35	2.47
- for Columns	m ³	1	0.71	3.18

23b. Person Days Generated for Brick Works, Plastering / Pointing and Tiling

Description	Unit	Qty	Mason (wd)	Workers (wd)
Brick laying work including mixing of mortar (for 1m ³ = 477 bricks)	m ³	1	1.41	2.11 *
<i>Note: * Allow 1 more worker for each additional storey of the building</i>				
Plastering and pointing with cement mortar including mixing of mortar	m ²	100	11	22
Laying tiles for floors and walls	m ²	100	26.91	21.53

23c. Person Days Generated for Roofing and Ceiling Works

Description	Unit	Qty	Carpenter (wd)	Workers (wd)
Roofing covering using corrugated iron sheets w/o rafters and purlins	m ²	100	10.76	10.76
Roofing using clay tiles including fixing of battens but excluding rafters	m ²	100	21.53	21.53
Ceiling works including installation of wooden beams	m ²	100	27.33	27.33

23d. Person Days Generated for Painting Works

Description	Unit	Qty	Painter (wd)	Workers (wd)
Painting using water-based emulsion (2 coats)	m ²	100	2.69	2.69
Painting using oil-based enamel on wood works (3 coats)	m ²	100	10.76	10.76

Source: ILO LIC Training Materials

8.13 Design Principles for Earthworks

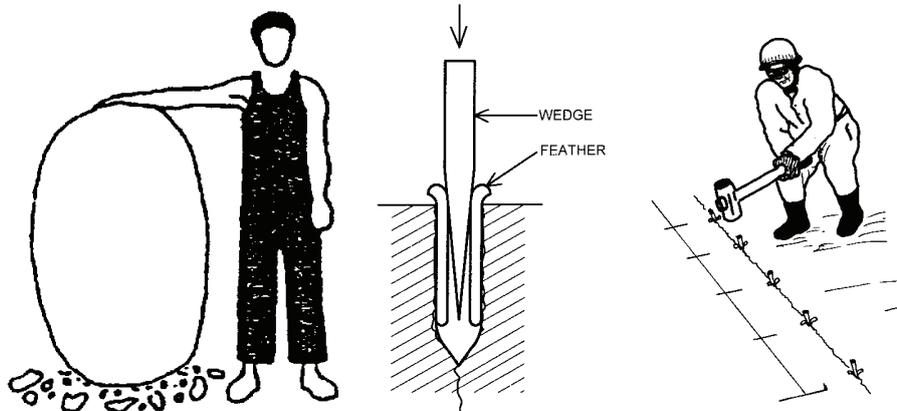
- The design of earthworks must consider the method of construction.
- Vertical and horizontal alignment of the works (roads, trenches, pipelines and stormwater channels) should optimise cut and fill and minimise deep or hard excavation or areas requiring specialist engineering—for example, dewatering or specialist ground stabilisation (see illustrations below).
- It is more cost-effective to ensure transverse balancing in LIC roadworks than longitudinal balancing and machine-based construction (MBC).
- Rock removal using LI methods for small outcrops includes moving, burying, breaking by fire and water, splitting using feathers and wedges, and using jackhammers (see illustrations below).
- Ensure task rates are adapted correctly for the excavation of soft-to-medium soil.
- Considerations for loading, moving and unloading earthworks materials to and from the project site include productivity, worker safety, and safe hauling distances (150-200m for local labour, 5km for local transport).
- Backfilling (reusing or replacing soil removed during the excavation) can be used for bedding, but compaction must comply with specifications.
- Trapezoidal (flat-bottomed) side drains are more conducive to excavation by hand and hydraulically more efficient than 'V' drains, which are more easily excavated by machines (see picture below).

Borrow Pit Design and Organisation

A borrow pit resulting from excavating material for use in embankments. The findings of borrow pit material testing should be presented in a standard format and should include:

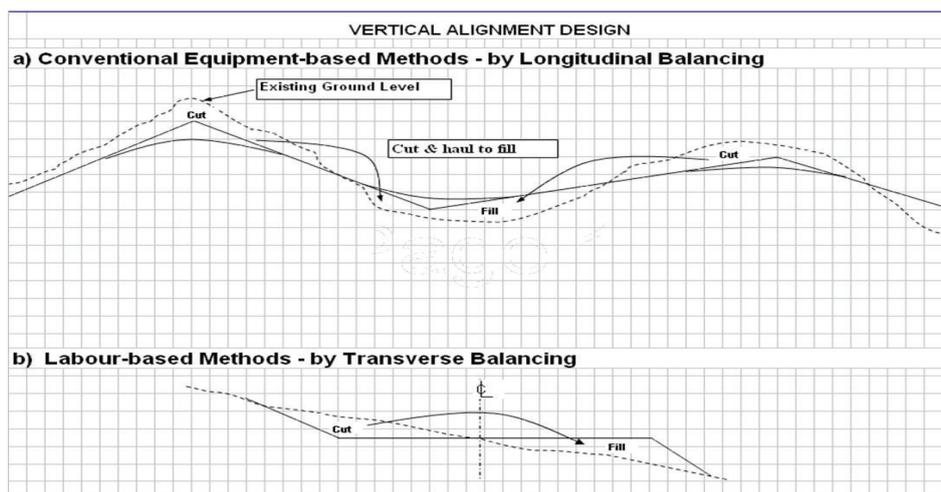
- The location and extent of the quarry. The quarry should be designed to self-drain, if possible
- The thickness and properties (hardness, stone content) of the overburden
- The thickness and properties of the seam (hardness, stone content, standard test results) and total volume to be extracted from the quarry
- Recommendations for working the quarry include considering the feasibility of excavation by hand. For example, creating loading bays and excavation could be done in layers and sloped to avoid landslides/collapse of the side slopes onto workers. Safety of the workers is of top priority, particularly when hand excavating material up to depth <1.5m

Boulder removal methods



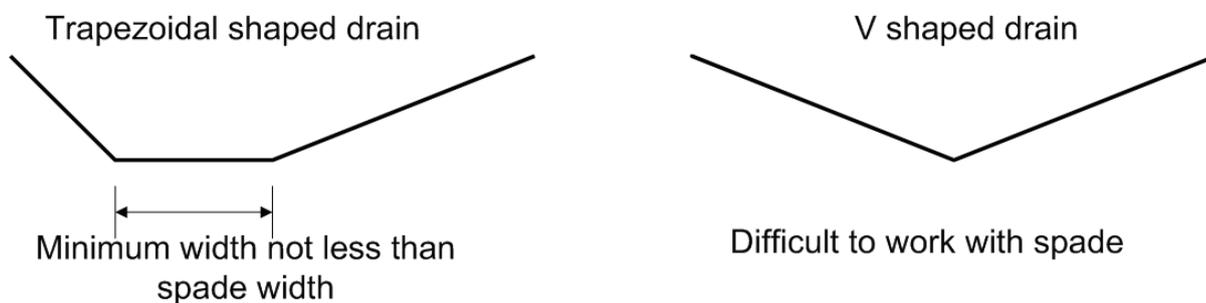
Source: ILO LIC Training Materials

Vertical Alignment Design



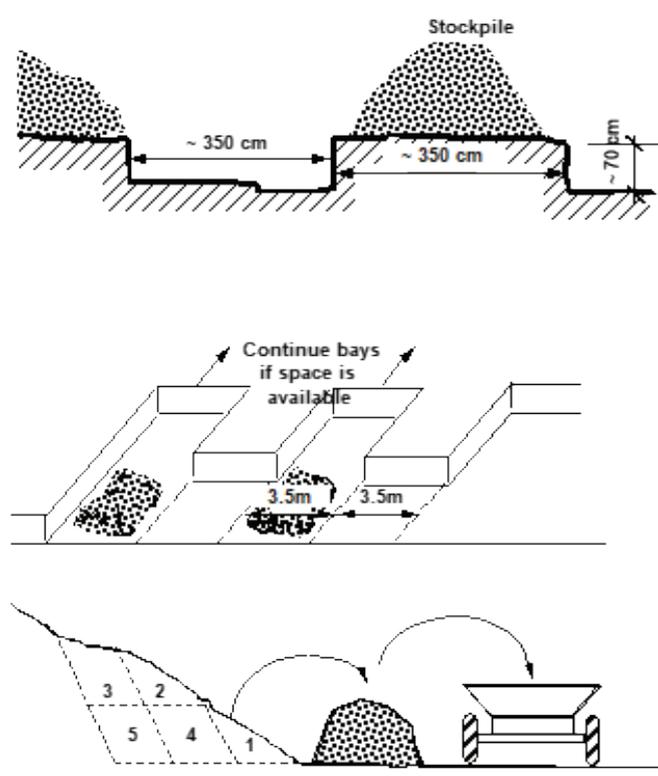
Source: ILO LIC Training Materials

Drain Shapes



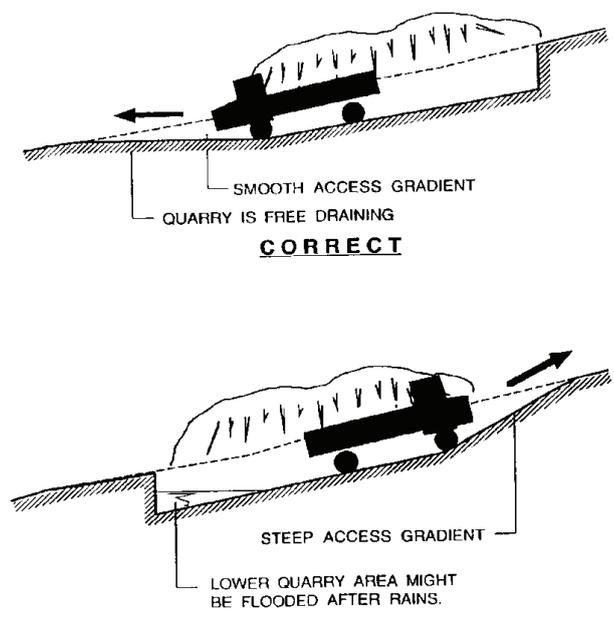
Source: ILO LIC Training Materials

Borrow Pits



Source: ILO LIC Training Materials

QUARRY TO DRAIN PROPERLY



Source: ILO LIC Training Materials

8.14 Other Design Considerations

Setting Out and Quality Control

- Use of simplified tools and equipment for setting out and quality control:
 - Ranging rods and profile boards
 - Boning rods
 - Ditching and sloping templates
 - Shutters for layer works
 - Concrete mixers
 - Pedestrian rollers for compaction

Use of Good Quality Hand tools

- The contractor is responsible for providing the hand tools, while the public body is responsible for ensuring that the tools are of good quality as their cost is included in the project cost paid for by the client.
- The following clause should also be added under the Special Conditions of Contract:
 - Provision of hand tools—The contractor shall, throughout the project duration, provide his/her labour force with hand tools of adequate quality and sufficient in numbers and make necessary provisions to maintain the tools in good and safe working conditions.

Pavement Design

- Ascertaining and use of suitable in-situ materials, with or without stabilisation, for sub-base and/or base layers.
- Suitable construction material should be sourced near the site.
- All efforts must be made to identify new quarries to reduce hauling distances incurred by using existing quarries.
- Sealing of low volume road using LIC methods:
 - Priming by hand sprayer
 - Cold asphalt seals
 - Chip spreading
 - Cold emulsion seals
 - Concrete block paving
 - Ultra-thin reinforced concrete
 - Others: Not very amenable to LI methods; otta and sand seals

Drawings for LIC works

- Drawings should be produced and presented clearly and easily.
- Where coordinates provide set-up information, it should be backed up with methods (not relying on sophisticated surveying instruments), such as offsets measurable using a standard tape.
- Except in special circumstances, drawings should be produced in an easily readable A3 format.

8.15 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- LIC Orientation Training Course: Reference Material, Sections 12a, 12c.

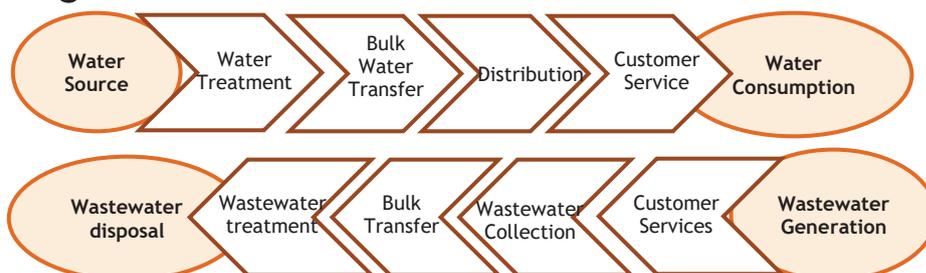
Session 9 : Elective 2 – Design Principles (Water/ Sanitation and Solid Waste Management)

Session Objectives:

By the end of this session, participants will be able to:

- Identify works that can be undertaken using LIC work methods and apply the appropriate LIC work methods specific to water/sanitation and solid waste management projects
- Understand the design considerations required when implementing works in water/ sanitation and solid waste management
- Influence design in line with for LIC principles
- Identify quality control tools/aids, perform quality control checks, and identify problems and defective work specific to water/sanitation and solid waste management projects

9.1 Diagram 13. The ‘Value Chain’ of Water & Sanitation Works



Source: Adapted from Arthur Andersen 2001

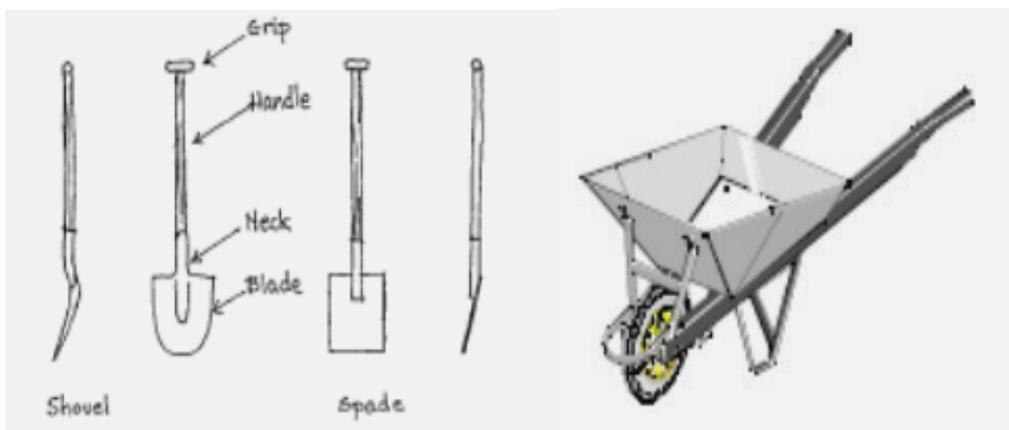
9.2 What Are Some of the Critical Design Considerations for LI Works?

- Labour availability—distance, wage rates, skills
- Adequate and competent supervision team
- Optimising cut and fill in excavations
- Minimise excavations deeper than say 1.5m
- Avoid areas with hard rock as far as possible
- Simplify drawings
- Minimise hauling distances
- Pre-manufactured elements not to exceed 320kg
- Hazardous material excluded e.g. lead, lime, asbestos
- Include as far as possible: masonry, stone masonry, stone pitching

9.3 Components of Typical Infrastructure Works Project

- Establishment—tools and equipment
- Setting out
- Site clearing
- Earthworks—excavations, backfilling, loading, haulage, unloading
- Bedding
- Pipe laying

9.4 Tools and Equipment



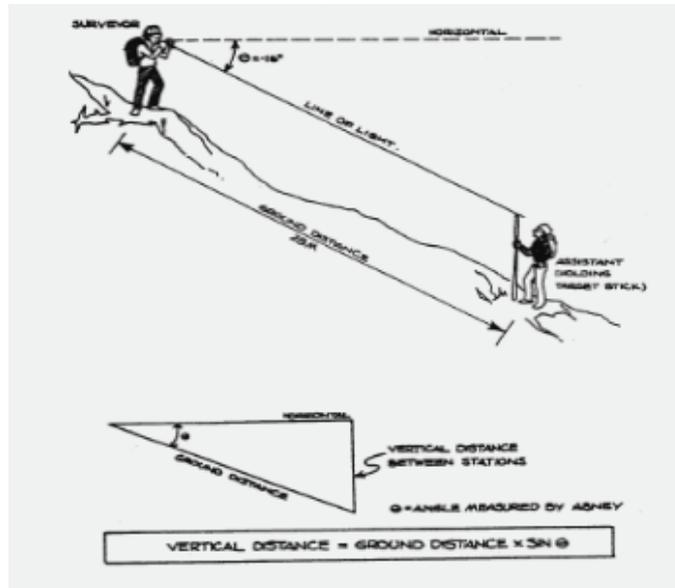
Source: ILO LIC Training Materials

9.5 Setting out (for pipework)

Setting out methods include:

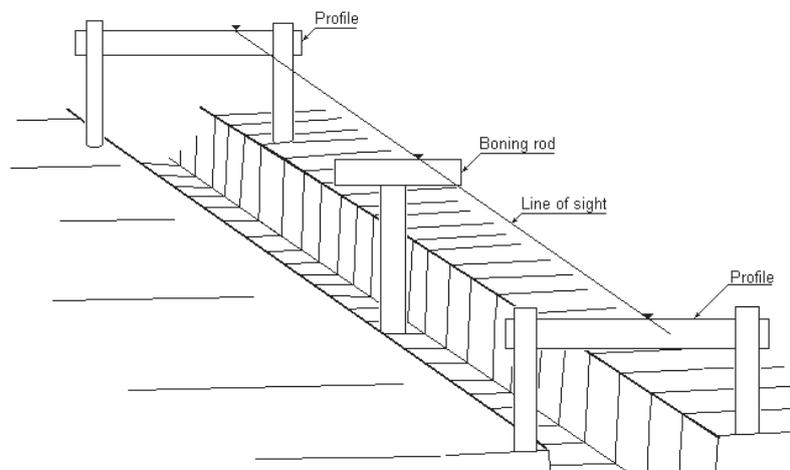
- Horizontal Alignments
 - Interpolation
 - Extrapolation
- Slopes
 - Profile boards and boning rods

Setting Out



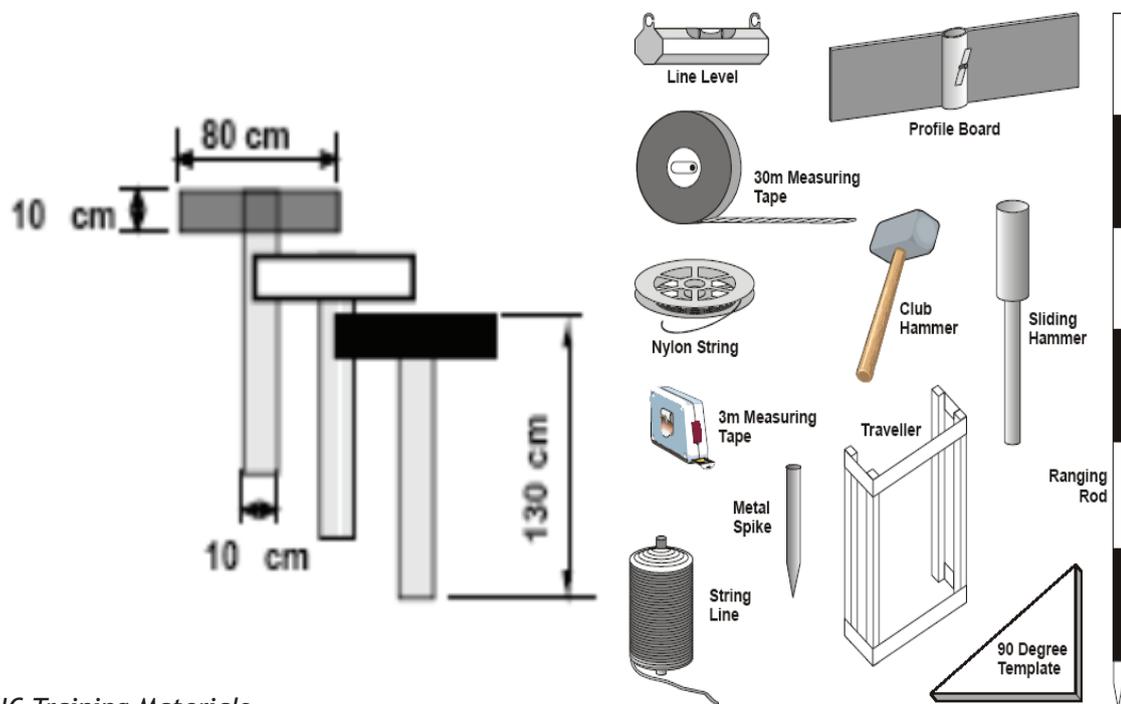
Source: ILO LIC Training Materials

Profile Boards and Boning Rods



Source: ILO LIC Training Materials

Basic Setting Out Equipment



Source: ILO LIC Training Materials

9.6 Site Clearing

Site clearing can include the following activities:

- Bush/grass clearing
- Tree and stump removal
- Grubbing
- Boulder removal

Bush/Grass Clearing

- Safe working space
- Disposal of bushes
- Protective gear
- Environment
- Animals, insects, reptiles and poisonous plants
- Measuring units
- Productivity rates
- During construction, especially during the rainy season, it is advisable to clear only a small area ahead of other activities as vegetation can appear again, resulting in double clearing.

Tree and Stump Removal

- Safety is paramount.
- Small trees should be removed with roots in one operation.
- For removal of large trees:
 - Clear an area around the tree of a diameter approximately twice the height of the tree; ensure escape routes are easily accessible
 - Check the tree's ground slope, branch distribution, and natural lean to determine the direction in which the tree will fall
 - Cut all the branches exposing the stem up to 5m
 - If necessary, cut a felling sink in the "fall" direction and cut the back to fell the tree or use a rope to pull it down
- Axes, chisels and sledgehammers can remove stumps
- Cut large trees into small logs for ease of removal
- For safety considerations, avoid tree felling during high winds
- Always seek the Engineer's consent before removing any trees

Grubbing

- Removal of vegetation
- Appropriate tools
- Working space
- Proper disposal

Boulder Removal

- Boulders greater than 0.15m³ (Approx 0.66m dia.) should be broken down for easy removal.
- Use appropriate tools or heating/cooling methods to break down the rock

9.7 Earthworks (Trenching)

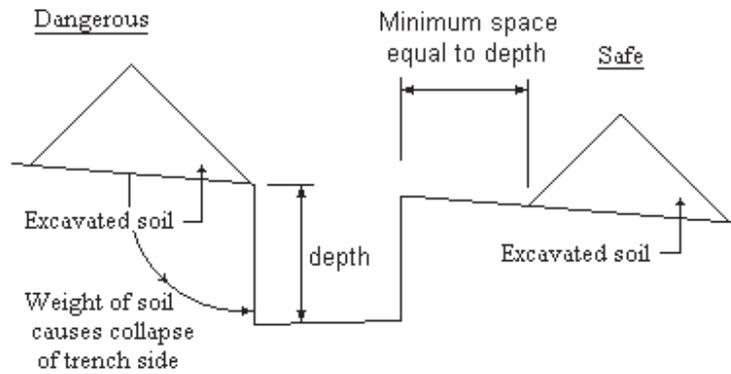
In the context of water/sanitation works, earthworks largely involve trenching, which are long and narrow excavations. Trenching is particularly important in water/sanitation works, where pipes are laid. This contrasts with other types of works, such as roadbuilding, where trenches may not be necessary. Trenching consists of the following activities:

- Excavations
- Pipe Laying (covered in 9.9 below)
- Backfilling
- Loading
- Haulage
- Unloading
- Finishing

Excavations (for trenches)

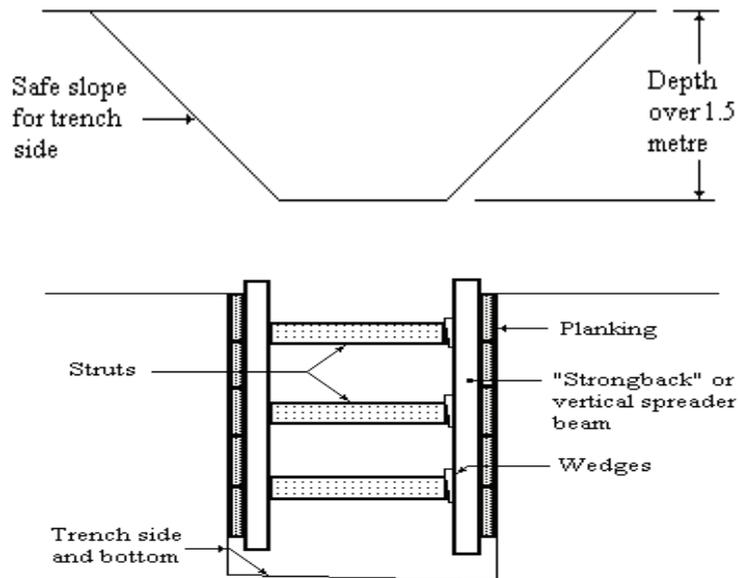
- Standard trench size: OD +600 for OD \leq 700mm (SANS).
- As necessary, stockpile the topsoil for reuse or hauling. Topsoil refers to the uppermost layer of the soil being excavated, composed of mineral particles, organic matter, water, and air.
- Classification of the material to be excavated will assist the contractor in determining suitable task rates and to work out the labour requirements, appropriate and the stability of the trench at the required depths.
- A dynamic cone penetrometer can be used to test materials. For example: soft, intermediate, or hard rock.
- Spoil material should be at least 1m from the trench for safety reasons. Spoil material refers to the ordinary soil and rocks dug out as part of the trench excavation (see illustrations below).
- Trench depth:
 - Of up to a maximum 1.5m can be safely dug by hand.
 - Of a depth greater than 1.5m needs to be protected against collapse, either by battering or shoring (see illustrations below).
- Inspect open trenches daily; trenches left open for more than 10 days should be adequately secured.
- If the trench bottom is waterlogged, use 19mm stone as bedding and working surface.
- Excavation is measured in metres (m), depth given for trenches, and cubic metres (m³) for other excavations.
- The contractor and engineer should agree on intermediate and hard rock material volumes before these are removed. LIC feasibility should be ascertained at the design stage if there are considerable volumes of intermediate and hard rock.

Placement of Excavated Soil

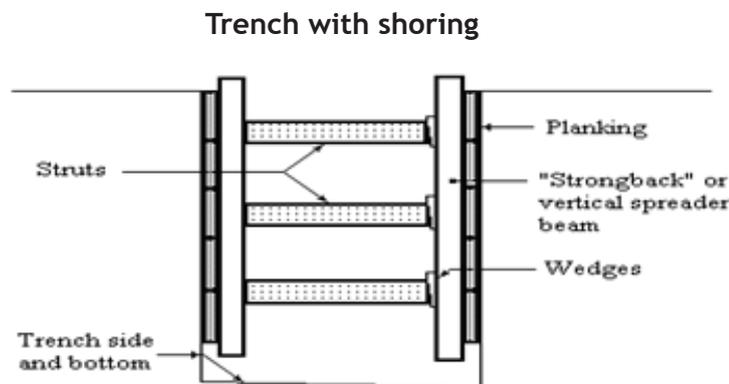


Source: ILO LIC Training Materials

Trench with sides battered back for safety



Source: ILO LIC Training Materials



Source: ILO LIC Training

Backfilling

Once the excavation is complete, the pipe laying can take place. This is covered in more detail in 9.9 below. Once pipes are in place, the trench will need backfilling, which is the process of reusing or replacing the soil removed during the excavation.

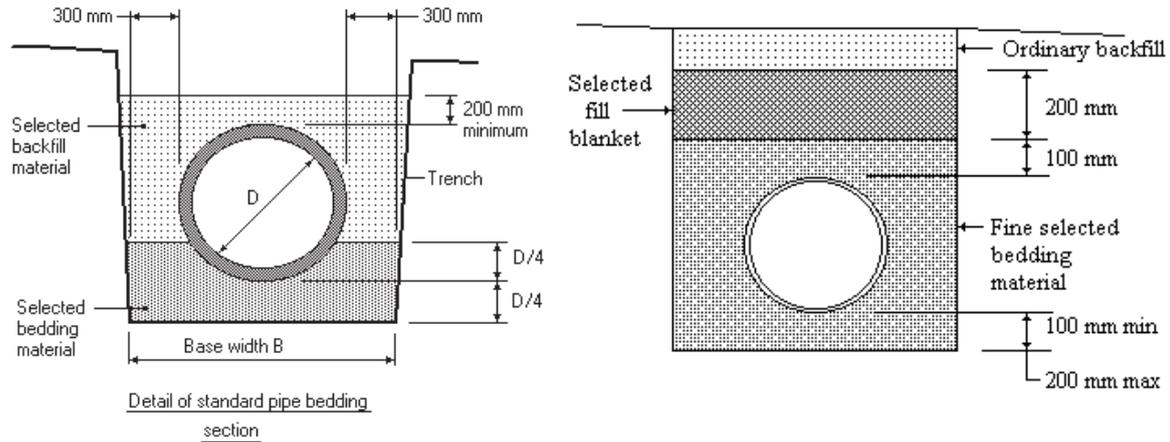
Loading, Haulage, Unloading

This refers to loading, moving and unloading earthworks materials to and from the project site. Some considerations include productivity, worker safety, and safe hauling distances (150-200m for local labour, 5km for local transport).

9.8 Bedding

Bedding refers to the soil layers in a trench on which pipes are laid. Bedding layers must provide adequate and continuous support while accommodating the pipeline and backfill material loads. Properly graded bedding materials must be compacted and laid along the trench to prevent pipe failure so that the load is evenly distributed. Bedding material must comply with specifications, and selecting suitable bedding materials is an important consideration. Compaction should be done for adequate pipe protection (see illustrations below).

Cross-section of pipe showing bedding layers



Source: ILO LIC Training Materials

9.9 Pipe Laying—Water Pipes

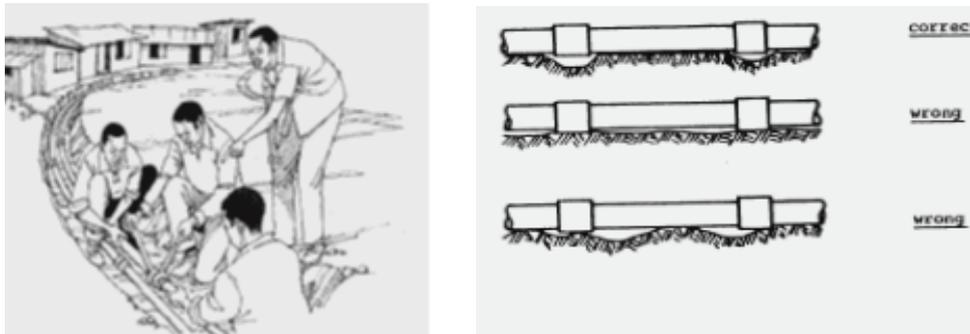
Pipe Classification

Rigid Pipes	Flexible Pipes
Examples: concrete, AC, EW, DI, steel pipes, GS	Examples: uPVC, HDPE, LDPE, GRP pipes

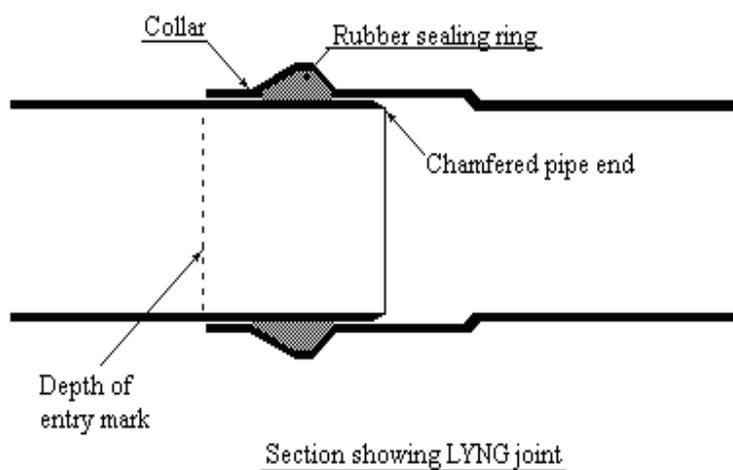
- Rigid pipes are sufficiently strong (within the pipe wall and joints) to withstand the most anticipated live and dead loads. Better embedment conditions improve a pipe’s ability to resist imposed loads.
- Flexible pipes rely upon the deformation of the pipe from imposed loads to mobilise the support of embedment materials on both sides of the pipe. Their primary structural function is distributing the imposed vertical loads to the surrounding soil. Some standards define a flexible pipe as one that can deflect more than 2% without cracking.

(Source: KWH Pipe: Comparison of We halite HDPE Pipe to Other Pipe Materials)

- For small schemes, main water pipelines are usually constructed in uPVC/HDPE pressure pipes because they are light and LIC-friendly, and uPVC pipes are susceptible to UV rays.
- Accessories such as valves, fire hydrants, and air valves should be as per specification.
- Pipe Testing
 - Pipes should be bedded, and Grade 15MPa/37.5mm thrust blocks should be constructed before testing and backfilling.
 - A maximum of 400mm of pipe should be tested at a time.
 - Inspection of alignment can be done using the ‘Mirror’ Test. A maximum deflection of 5% is allowable for uPVC pipes. Pressure Testing should always be done when thrust blocks are at least 14 days old.



Source: ILO LIC Training Materials



Source: ILO LIC Training Materials

9.10 Wastewater/Sewerage Works

- Sewerage pipes (see table below).
 - uPVC, EW (Vitrified Clay), AC pipes, GRP and concrete are usually used for wastewater conveyance.
 - The minimum pipe diameter for mainline sewers should be 160mm for uPVC pipes and 150mm for EW pipes.
 - The minimum pipe diameter for house connections is 100mm diameter.
- Rule of Thumb
 - Minimum slopes 1: Pipe Dia. in mm
- Design to ensure self-cleansing velocities.
- Inspection chambers in precast concrete rings or brick Inspection chambers are more LI-friendly.
- Rings up to 500mm are mostly less than 320kg (see table below).
- Pipes can be tested using air or water test methods. At least 10% of the Inspection chambers are tested.
- Most sewerage accessory works can be constructed by LIC methods.

9.11 Table 24. Pipes Specifications

Manuf-acturer	Type	Nominal Dia mm	Class	Pipe Length m	Unit Weight kg/m	Pipe Weight kg/pipe	LIC Friendly?
Petzetakis	UPVC	250	400KPa	6	5.96	36	Yes
Petzetakis	UPVC	315	34	6	13.96	84	Yes
Nutec	AC	400	3	5	54.49	272	Yes
Rocla	Conc.	450	25D	1.83	245	448	No
Rocla	Conc.	450	25D	2.44	240	587	No

Source: ILO LIC Training Materials

9.12 Table 25. Inspection chambers Ring Masses

Pipe Class	Nominal Diameter ND mm	Inside Diameter ID mm	Nominal Length L mm	Approximate Mass per Ring kg/pipe	LIC Friendly?
15D	750	750	250	90	Yes
		750	500	180	Yes
		750	1000	359	No
	1000	1000	250	140	Yes
		1000	500	281	Yes
		1000	1000	561	No
	1250	1250	250	202	Yes
		1250	500	403	No
	1500	1523	250	270	Yes
	1800	1829	250	371	No
	1950	1950	1000	1960	No

Source: LIC Work Methods for WatSan and Solid Waste Works

9.13 Maintenance of Pipes and Quality Control

- Restoring burst water pipes requires isolation using valves, draining of water and replacing the affected section.
- Fire hydrants should be regularly cleared of dirt and sediments.
- Valves should be regularly inspected and attended to. Air valves should be cleaned periodically, as insect nests usually block openings.
- Restoring of sewer pipes:
 - Allow for bypassing the affected section
 - Open Inspection chambers for at least 30 minutes or as necessary to allow methane gas to escape
 - Use ventilators or gas detectors if necessary
 - Use appropriate tools to clear blockage
- Inspection chambers should be inspected at least once a year.
- Information required for quality control includes:
 - Inspections and tests required
 - Characteristics to be inspected or tested
 - Specified acceptance criteria
 - Requirements for testing equipment
 - Record keeping and storage requirements
- Quality control reports:
 - Description and location of the work completed (chainage, position, etc.)
 - Record of the measurements taken during any tests. The record should state the type of test and the conclusion (satisfactory or unsatisfactory)
 - The measured DCP value also gives the position of the measurement
- Tips for practical quality control:
 - Only the specified piping materials must be used. Check the drawing requirements against the pipes themselves
 - The correct fittings must be installed
 - Valves (if installed) must be checked for the direction of closing, and the markings on the valve body must be checked against the drawing or specification requirement
 - Concrete work must be carefully formed, well mixed and properly compacted
 - Cube tests
 - Backfill in layers and compact
 - Compaction test

9.14 Table 26. LIC Works in Major Projects

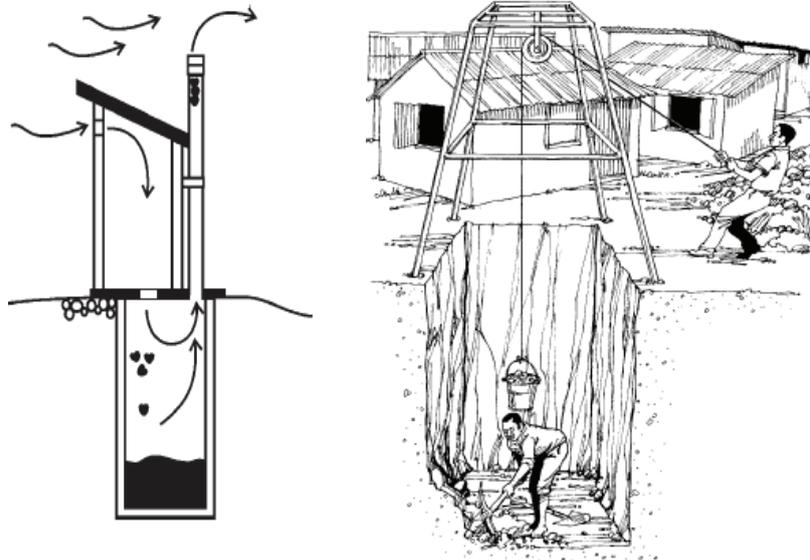
LIC can be incorporated into aspects of large projects such as:

- Dam construction
- Large water schemes
- Large sanitation schemes

Examples of specific LIC works that can be incorporated into different types of significant projects are shown below in Table 26.

Type of Major Project	Examples of Suitable LIC Works
Dam Construction	<ul style="list-style-type: none"> • Construction of VIP latrines • Construction of water pipes • Construction of pump stations • Excavation for cut-off trench and spillway
Large Water Schemes	<ul style="list-style-type: none"> • Excavation for waterworks • Masonry construction for waterworks <ul style="list-style-type: none"> – Reservoirs – Filter galleries • Placing of sand in filters <ul style="list-style-type: none"> – Slow filters – Rapid filters • Ferro-cement reservoirs • Construction of water pipes • Construction of pump stations • Electricity supply works <ul style="list-style-type: none"> – Waterworks – Pump stations • Landscaping
Large Sanitation Schemes	<ul style="list-style-type: none"> • Construction of VIP latrines • Construction of septic tanks and soak-aways • Construction of sewage pump stations • Construction of small sewage ponds (Say 1000 - 1500m³/day)
Common to all the above types of major projects	<ul style="list-style-type: none"> • Temporary access roads • Permanent roads • Permanent/temporary offices • Permanent/temporary housing • Construction of sewers <ul style="list-style-type: none"> ○ ELHUS (excavate, load, haul, unload and spread) ○ Pipe laying • Haulage of materials • Electricity supply works

VIP Latrines



Source: ILO LIC Training Materials

9.15 Solid Waste Management

Why do we need solid waste management?

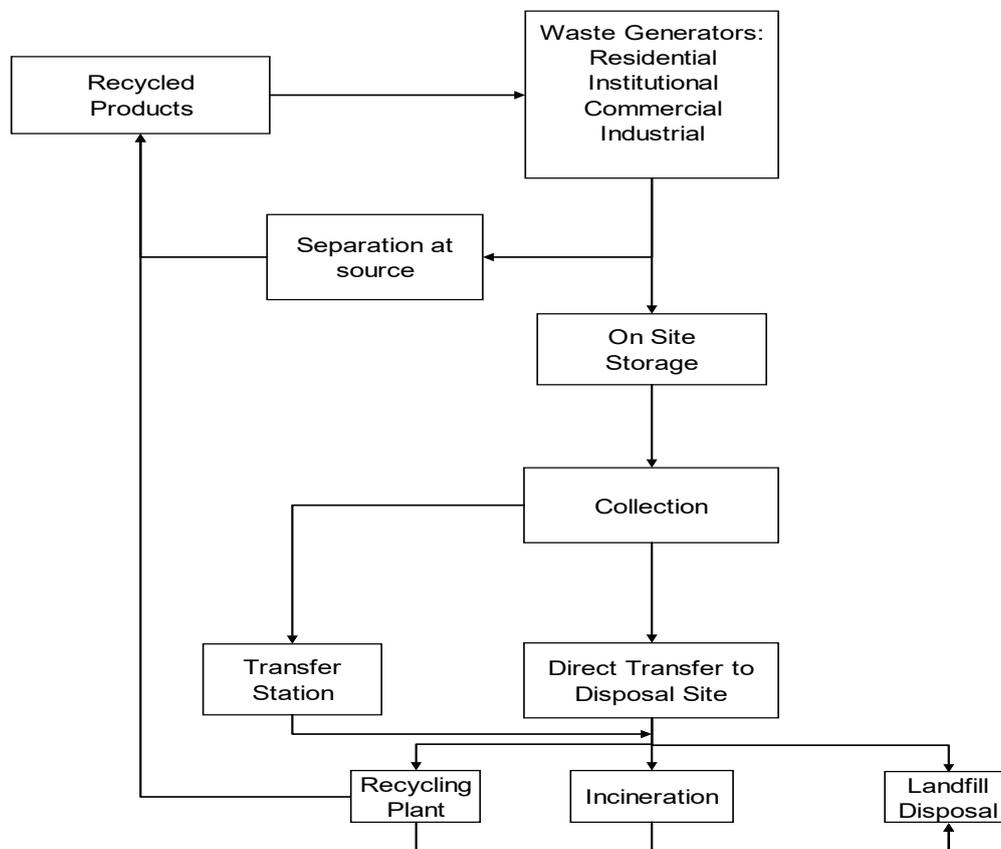
- **Uncontrolled burning of waste:**
 - Pollutes the air
 - May produce poisonous gases which may be carcinogenic
 - Spraying cans can explode causing injury
- **Uncontrolled burying of waste:**
 - May pollute the ground water
 - May produce carcinogenic poisonous gases
 - May produce explosive gases
- **Uncollected piles of garbage:**
 - Attracts animals and insects which may spread diseases.
 - May contain sharp objects like needles, broken glass and blades, and other dangerous (hazardous) waste, which can harm children, scavengers and animals.
 - Piles of waste are unsightly, produce odours, and make people feel uncomfortable.
 - Block drains, leading to flooding and blocked access routes.

Waste has to be collected from houses and businesses and transported to a disposal point. The objectives are:

- Collect solid waste regularly and reliably
- Eliminate solid waste from drains, roadsides, empty plots and around solid waste collection and transfer facilities
- Dispose of waste in an economic and hygienic way
- Allow recycling of useful materials

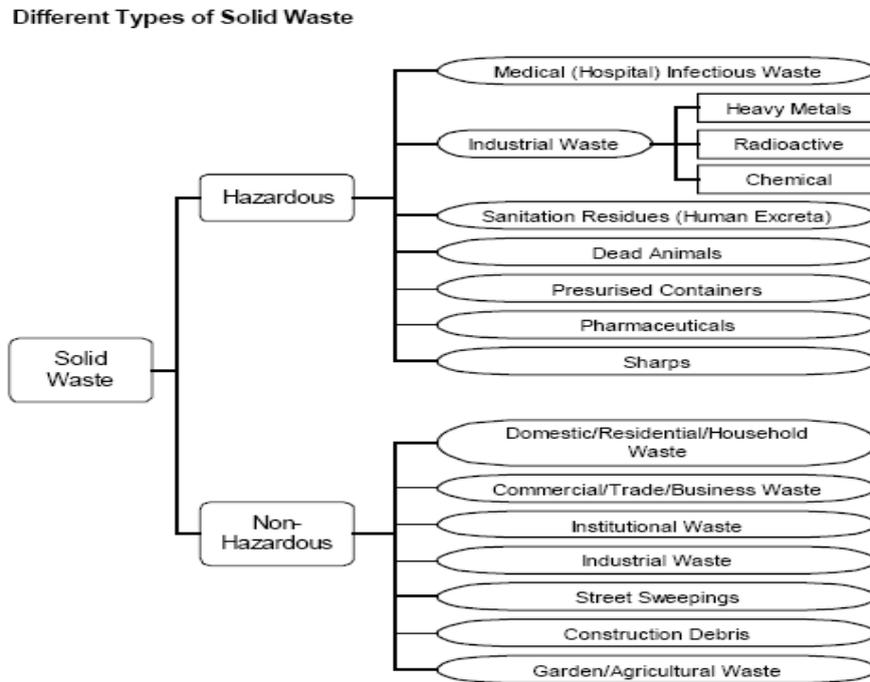
- Typical waste classes:
 - Household waste
 - Commercial waste
 - Industrial waste (if hazardous, special arrangements should be made)
 - Street waste and litter
 - Garden/agricultural waste
 - Dead animals
- Health education is an important part of discouraging poor solid waste practices and encouraging hygienic and sustainable practices.

9.16 Diagram 14. Typical Waste Flow



Source: ILO LIC Training Materials

9.17 Diagram 15. Different Types of Solid Waste



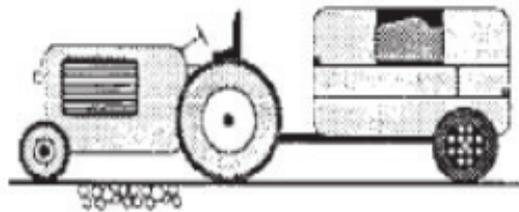
Source: ILO LIC Training Materials

9.18 Different Methods of Solid Waste Collection and Management

- Primary collection: Tools for manual street sweeping:
 - Brooms and shovel
 - Collection carts (wheelbarrows or hand carts). Alternatives may include bicycle or donkey carts
 - High potential for local job creation
 - Challenge: Waste collectors are regarded as being of a low social status
- Transfer stations:
 - Should be sited away from settlements or businesses
 - They should be fenced or guarded to discourage scavengers/animals
- Secondary collection:
 - Has potential for entrepreneurial activities, as private contractors may also transport other goods or offer other services to ensure viability.
 - Transport–Collection vehicles include:
 - Specially designed/modified trucks (which may not be useful in provision of other services)
 - Articulated trucks/trailer
 - Tractors/trailers (for short distances, may offer agricultural) services as well)

- Recycling and composting
 - Wastepaper—newspapers, magazines, cardboard, books, letters
 - Metal—scrap metal, aluminium (beverage) cans, iron, copper
 - Textile cut-offs can be used to produce door mats, cushions, mattresses, kid’s play wear, home-made caps and dust coats, stuffing, dolls
 - Plastic, such as broken buckets, containers, etc., can be re-melted
 - Organic materials, such as vegetable leftovers, can be used for composting
 - Glass cullet can be used in fiberglass insulation
 - Coal fly ash for use in concrete products manufacture
 - Creates jobs
- The main hazards for solid waste workers:
 - Cuts and wounds from sharp objects
 - Contamination from hazardous waste such as hospital waste, chemical waste or handling dead animals
 - Air pollution: respiration problems from the fumes that are generated by waste as well as dust created by sweeping
 - Other diseases are transmitted through solid waste and through direct contact with exposed skin
 - Muscle and back strains due to incorrect posture or having to lift heavy waste
 - Road accidents, particularly for street sweepers
- Hazard Mitigation
 - Educate workers about specific occupational hazards
 - Ensure use of protective gear such as dust muffs, gloves, boots, dust masks, goggles
 - Ensure availability of first-aid kit within reasonable reach of the work site
 - Use reliable equipment and keep it in good condition
 - No alcoholic drinks or drugs during work
 - Workers should undergo medical check-ups regularly
 - Do not eat or drink anything while working
 - Workers to wash hands and face before leaving the place of work or before eating

Solid Waste Collection Methods



Source: ILO LIC Training Materials

9.19 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- LIC Orientation Training Course: Reference Material, Sections 12b, 14.

Session 10 : Elective 3 – Alignment of Projects

Session Objectives:

By the end of this session participants will be able to:

- Describe in detail the requirements for the alignment of projects to EPWP requirements
- Provide support in the alignment of projects to EPWP requirements

10.1 Why Align Projects to EPWP Principles and Procedures?



- To ensure feasible project to be done using LI methods are designed and specified accordingly in the project document.
- To incorporate project-specific clauses related to the use of LI methods under appropriate sections, including:
 - **The Tender Section**—Under relevant parts of the tendering procedures and returnable documents
 - **The Contract Section**—Special conditions of contract, project specifications, technical works specification, schedule of quantities, and drawings
- These special clauses protect all parties, including the employer, consultant/project managers, other service providers, contractors, and, specifically, workers. The clauses also contractually bind those project activities to be executed LI, thereby maximising employment creation.

! Key references: “Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the EPWP” (Third Edition, 2015).

10.2 The Client-Consultant Contract

Labour-Intensive Method (LIM) Skills Requirements for Designers

- As per the EPWP Implementation Guidelines, consultants' personnel appointed to design EPWP projects should have the relevant LIM/LIC qualifications, namely:
 - NQF 7 for Design Engineers/ Professionals
 - NQF 5 for Site Technicians/ Engineer's Representative
- Consultant's Declaration to the Client:

I.....(Name of Designer) hereby certify that the above-mentioned project has been appropriately designed; procurement documents and reporting templates have been prepared in accordance with the "Code of Good Practice for EPWP" and the latest edition of "EPWP guidelines for Implementation of Infrastructure projects", to optimise employment creation to achieve the stipulated minimum project labour intensity.
- Documentation for Professional Services Contracts/Service Level Agreements (SLAs)
 - Review Terms of Reference for consultancy assignments by incorporating clear client/employer objectives aligned to LIM/LIC requirements (compliance with EPWP requirements at design and implementation stages).
 - No additional cost to design LI projects
- Documentation for Professional Services Contracts/Service Level Agreements (SLAs)
 - Staff must be competent in LI methods
 - Consultant to collect specific information from contractor and submit to client (employment, assets etc.)
 - Appendix E of the guideline provides templates that design and supervision consultants should complete and submit to the public body, which will monitor and enforce compliance with EPWP requirements.
 - These templates are also provided as **Annex 3** and **Annex 4** of this Learner Manual.
- Monthly report:

The Consultant shall, before certifying a contractor's payment certificate, ensure that the contractor has submitted labour information in a format and timeframe specified by the employer. If the information submitted by the contractor is inadequate the consultant shall not submit the payment certificate to the employer for payment of the relevant outputs.

10.3 Available Forms of Contract

- There is no particular EPWP contract format, it is not necessary to create new forms of contract or to amend the approved forms of contract to implement labour-based works.
- Put requirements for LI works in appropriate sections, such as Scope of Works, Special Conditions of Contract, and Specifications.
- Align sections of available Forms of Contract by incorporating EPWP special requirements:
 - CC for Construction of Building and Engineering Works (Red Book) (FIDIC)
 - CC for Plant and Design-Build for Electrical and Mechanical Plant and for Building and Engineering Works Designed by Contractor (Yellow Book) (FIDIC)
 - CC for EPC Turnkey Projects (Silver Book) (FIDIC)
 - GCC for Construction Works (2015) (SAICE)
 - JBCC Series 2018 Principal Building Agreement
 - JBCC Series 2018 Minor Works Agreement
 - NEC Engineering and Construction Short Contract (ICE)
 - NEC Engineering and Construction Contract (ICE)

10.4 Project Cover Document

! Insert the EPWP logo, as a means of branding the project as an EPWP Project.



10.5 Template

DEPARTMENT OF TRANSPORT

THE CONSTRUCTION OF LAYERWORKS AND ROAD PRISM DRAINAGE ON MAIN ROAD P700: PHASE 2: KM 33,6 TO KM 37,0

CONTRACT No. ZNT ****/** T

Name of Tenderer:
This tender closes at 11h00 on Tuesday 17 January 2012 at the offices of the Department of Transport located at 172 Burger Street, PIETERMARITZBURG NO LATE SUBMISSIONS WILL BE CONSIDERED

Issued by: _____ Prepared by: _____



10.6 Summary Based on Annex F of the Standard Conditions of Tender (CIDB 2010)

Table 6: Standard headings and sequencing of documents when soliciting tenders where a three volume approach is adopted

Volume	Contents	
	Number	Heading
Volume 1	TENDERING PROCEDURES	
	T1.1	Tender Notice and Invitation to Tender
	T1.2	Tender Data
Volume 2	RETURNABLE DOCUMENTS	
	T2.1	List of Returnable Documents
	C1.1	Form of Offer and Acceptance
	C1.2	Contract Data (Part 2: Data provided by the contractor)
	C2.2	Activity Schedule or Bills of Quantities
Volume 3	DRAFT CONTRACT	
	Part C1: Agreement and Contract Data	
	C1.2	Contract Data (Part 1: Data provided by the employer)
	Part C2: Pricing data	
	C2.1	Pricing Assumptions
	Part C3: Scope of Work	
	C3	Scope of Work
	Part C4: Site information (engineering and construction works contracts only)	
C4	Site Information	

Table 7: Standard headings and sequencing of documents when soliciting tenders where a single volume approach is adopted

Contents	
Number	Heading
TENDER	
Part T1: Tendering procedures	
T1.1	Tender Notice and Invitation to Tender
T1.2	Tender Data
Part T2: Returnable documents	
T2.1	List of Returnable Documents
T2.2	Returnable Schedules
CONTRACT	
Part C1: Agreement and Contract Data	
C1.1	Form of Offer and Acceptance
C1.2	Contract Data
Part C2: Pricing data	
C2.1	Pricing Assumptions
C2.2	Activity Schedule or Bills of Quantities
Part C3: Scope of Work	
C3	Scope of Work
Part C4: Site information (engineering and construction works contracts only)	
C4	Site Information

10.7 Clauses to be Aligned

Clause Number	Data Wording	Align
F.1.2	PART T1: TENDERING PROCEDURES T1.1 Tender Notice and Invitation to Tender	✓
	T1.2 Tender Data	
	PART T2: RETURNABLE DOCUMENTS T2.1 List of Returnable Documents	
	T2.2 Returnable Schedules	✓

Clause Number	Data Wording	Align
F.1.2	PART C1: AGREEMENTS AND CONTRACT DATA C1.1 Form of Offer and Acceptance C1.2 Contract Data C1.3 Performance Guarantee C1.4 Agreement in terms of Section 37(2) of the Occupational Health and Safety Act No. 85 of 1993 C1.5 Retention Money Guarantee C1.6 Transfer of Rights	✓

Clause Number	Data Wording	Align
F.1.2	PART C2: PRICING DATA C2.1 Pricing Instructions C2.2 Schedule of Quantities	✓ ✓
	PART C3: SCOPE OF WORKS C3.1 Standard Specifications C3.2 Project Specifications C3.3 Particular Specifications	✓ ✓ ✓

Clause	Data Wording	Align
	PART C4: SITE INFORMATION C4.1 Locality Plan C4.2 Example of Contract Signboard Details C4.3 Existing Services Report (delete if not required) C4.4 Conditions on Site: Materials Information (delete if not required) C4.5 Traffic Information(delete if not required) C4.6 Any other relevant technical reports (delete if not required)	J

10.8 The Tender Section

Tenderers need to demonstrate that they will have the necessary management and supervisory personnel to fulfil the Scope of Work for LIC.

Public bodies must only award contracts to contractors who have demonstrated that they will have in their employ (if awarded the contract) suitably qualified senior and middle supervisory staff to supervise the Labour-Intensive works during the validity of the contract.

Clause Number	Data Wording	EPWP GL Reference
F.1.2	T1.1Tender Notice and Invitation to Tender	Para 5.3.1; page 9

T1.1 TENDER NOTICE AND INVITATION TO TENDER

CONTRACT NO. ZNT ****/** T
for

THE CONSTRUCTION OF LAYERWORKS AND ROAD PRISM DRAINAGE ON MAIN ROAD 700: PHASE 2: KM 33,6 TO KM 37,0

The Province of KwaZulu-Natal, Department of Transport, invites tenders from Established Contractors, experienced in roadworks, for the construction of layerworks and road prism drainage on Main Road 700: Phase 2: km 33,6 to km 37,0. The duration of the project will be 8 months.

The Established Contractor shall be registered in CIDB contractor grading designation 7CE or higher.

The successful tenderer must subcontract a minimum of 35% of the value of the contract to Targeted Enterprises through Contract Participation Goals (CPG).

Tenderers shall be required to demonstrate that they will have in their employ during the contract period the necessary personnel satisfying the requirements of the Scope of Work for labour-intensive competencies for management and supervisory personnel.

Tender documents will be available as from 10h00 on Friday 18 November 2011 during working hours (i.e., 08h00 to 16h00 Monday to Friday) until 15h00 on the day prior to the Clarification Meeting. The physical address for collection of tender documents is: Department of Transport, Acquisition Section, 'B' Block, 172 Burger Street, Pietermaritzburg.

A non-refundable tender deposit of R450 payable in cash or by bank guaranteed cheque made out in favour of 'Province of KwaZulu-Natal' is payable on collection of the tender documents.

Queries relating to this tender may be addressed to:

Only tenderers who have in their employ staff that satisfy the requirements of the scope of work for LI competencies for supervisory and management staff are eligible to tender.

Clause Number	Data Wording	EPWP GL Reference
F.2	F.2 TENDERER'S OBLIGATIONS	
F.2.1	Eligibility	Para 5.3.1; page 9

to become acquainted with the basics of construction management, the implementation of preferential construction procurement policies, and participation of targeted enterprises and labour.

The Employer's Agent is:

Name of the firm: Joe Blogs Engineers (Pty) Ltd
 Contact person: Mr. J. Blogs
 Telephone: (033) 345 3212
 Fax: (033) 342 6272
 E-mail: joe@blogs.co.za

A Tenderer will not be eligible to submit a tender if:

- (a) the Contractor submitting the tender is under restrictions or has principals who are under restriction to participate in the Employer's procurement due to corrupt or fraudulent practices;
- (b) the Tenderer does not have the legal capacity to enter into the contract;
- (c) the Contractor submitting the tender is insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of the foregoing;
- (d) the Tenderer does not comply with the legal requirements stated in the Employer's procurement policy;
- (e) the Tenderer cannot demonstrate that he possesses the necessary professional and technical qualifications and competence, financial resources, equipment and other physical facilities, managerial capability, personnel, experience and reputation to perform the contract;
- (f) the Tenderer cannot provide proof that he is in good standing with respect to duties, taxes, levies and contributions required in terms of legislation applicable to the work in the contract.
- (g) the Tenderer cannot demonstrate that he will have in his employ during the contract period the necessary personnel satisfying the requirements of the Scope of Work for labour-intensive competencies for management and supervisory personnel.

The Established Contractor shall be registered in CIDB contractor grading designation 7CE or higher.

In terms of the KwaZulu-Natal Supply Chain Management Policy Framework, all suppliers of goods and services to the Province of KwaZulu-Natal are required to register on the Central Supplier Database.

Prospective suppliers should self-register on the CSD website www.csd.gov.za.

IF THE SUPPLIER IS NOT REGISTERED AT THE CLOSING TIME OF TENDER, THE SUPPLIER WILL BE DISQUALIFIED AT THE TENDER EVALUATION PROCESS.

The tenderer must submit the names of all management and supervisory staff who will supervise the LI portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirements.

Clause Number	Data Wording	EPWP GL Reference
F.2.18	PROVIDE OTHER MATERIAL	
		Para 5.3.1; page 9
	T2.2 Returnable Schedules Key personnel	

F.2.15	The closing time for submission of Tender Offers is: 11h00 on Tuesday 17 January 2012 Telegraphic, telephonic, telex, facsimile, electronic, e-mailed and late tenders will not be accepted.
F.2.16	The tender offer validity period is twelve (12) weeks from the closing time for submission of tenders.
F.2.18	The tenderer must submit to the Employer the names of all management and supervisory staff that will be employed to supervise the labour-intensive portion of the works together with satisfactory evidence that such staff members satisfy the eligibility requirement (refer to Returnable Schedule H).
F.2.19	Access shall be provided for inspections and testing by personnel acting on behalf of the Employer.
F.2.22	This is not applicable.

F.1.2	T2.2 Returnable Schedules	Align
A.	CERTIFICATE OF ATTENDANCE AT CLARIFICATION MEETING	
B.	RECORD OF ADDENDA TO TENDER DOCUMENTS	
C.	COMPULSORY ENTERPRISE QUESTIONNAIRE	
D.	CERTIFICATE OF AUTHORITY	
E.	PLANT AND EQUIPMENT	
F.	EXPERIENCE OF TENDERER	
G.	PROPOSED SUBCONTRACTORS	
H.	KEY PERSONNEL	✓
I.	DEVIATIONS AND QUALIFICATIONS	
J.	CONTRACTOR'S HEALTH AND SAFETY DECLARATION	
K.	TAX COMPLIANCE STATUS	
L.	TENDERER'S BEE VERIFICATION CERTIFICATE	
M.	SCHEDULE OF ALTERNATIVE TENDERS	
N.	TENDERER'S PARTICIPATION IN JOB CREATION USING LOCAL LABOUR	✓
O.	TENDERER'S CONFIRMATION OF BANKING DETAILS AND ACCOUNT STATUS REPORT	

The tenderer must insert (in the spaces provided) a list of the key personnel who will manage construction, with a resume of their experience with particular reference to similar construction. The tenderer shall attach the curriculum vitae of the listed key management personnel.

F.1.2	T2.2	Returnable Schedules	EPWP GL Reference
	H. H1.	KEY PERSONNEL KEY PERSONNEL - MANAGEMENT	Appendix C pp 25-26

DESIGNATION	NAME	PROJECT TYPE	VALUE OF WORK	YEAR COMPLETED
CONTRACTS MANAGER				
CONSTRUCTION MANAGER				

H1. KEY PERSONNEL - MANAGEMENT

The Tenderer must insert in the spaces provided below a list of the key personnel to be employed in the management of the construction of the Works, together with a resume of their experience with particular reference to the construction of similar Works.

The Tenderer shall attach the curriculum vitae of the listed key management personnel to the page included below for this purpose.

DESIGNATION	NAME	PROJECT TYPE	VALUE OF WORK	YEAR COMPLETED
CONTRACTS MANAGER				
CONSTRUCTION MANAGER				

Contractors shall employ in LI works only those supervisory and management staff that have completed the required skills.

Foremen/supervisors at NQF level 4 “National Certificate: Supervision of Civil Engineering Construction Processes”

Site agent/construction manager at NQF level 5 “Manage Labour-Intensive Construction Processes” or equivalent Quality Council for Trades and Occupations (QCTO) qualifications at NQF level 5 or 7.

Insert the relevant details of the personnel employed in the construction of the works possessing the required qualifications/experience in LI. A copy of the relevant qualification certificate for each such person shall be attached.

DESIGNATION	NAME	NAME OF TRAINING INSTITUTION	QUALIFICATION OBTAINED IN THE SUPERVISION OR MANAGEMENT OF LIC PROJECTS	YEAR QUALIFICATION OBTAINED

H2. KEY PERSONNEL – LABOUR INTENSIVE ACTIVITIES

Contractors shall employ in labour-intensive works only those supervisory and management staff that have completed the required Skills Programme in terms of Appendix C of the “Guidelines for the implementation of labour-intensive infrastructure projects under the Expanded Public Works Programme (EPWP) Third Edition 2015”:

- Foremen / Supervisors at NQF level 4 “National Certificate: Supervision of Civil Engineering Construction Processes”;
- Site Agent / Construction Manager at NQF level 5 "Manage Labour-Intensive Construction Processes" or equivalent Quality Council for Trades and Occupations (QCTO) qualifications at NQF level 5 or 7.

Tenderers’ attention is drawn to the required minimum supervisor to worker ratio for this project stated in clause F1.3 of Part F of the Particular Specifications.

The Tenderer must insert in the spaces provided below the relevant details of the personnel to be employed in the construction of the Works possessing the required qualifications in the supervision or management of LIC projects. A copy of the relevant qualification certificate for each such person shall be attached to the next page below.

DESIGNATION	NAME	NAME OF TRAINING INSTITUTION	QUALIFICATION OBTAINED IN THE SUPERVISION OR MANAGEMENT OF LIC PROJECTS	YEAR QUALIFICATION OBTAINED

Tenderers shall ensure that employment targets (work opportunities) of recruited participants (unskilled and semi-skilled labour) constitute the following demographic characteristics which is per requirements of the EPWP:

- 60% Women
- 55% Youth
- 2% People with disability

T2.2 Returnable Schedules	
N TENDERER'S PARTICIPATION IN JOB CREATION USING LABOUR	
The minimum required content of unskilled labour for <u>this</u> project shall be calculated as follows:	
Minimum required content of such local labour (%) -Labour intensity (%)	
$LI = \frac{100 \times \text{amount spent on wages for such local labour (excluding VAT)}}{\text{(total value of the project (excluding VAT))}}$	
The minimum required content of such local labour for this project shall be ? %.	

10.9 The Contract Section

Clause Number	Data Wording	Align
F.1.2	PART C1: AGREEMENTS AND CONTRACT DATA C1.1 Form of Offer and Acceptance C1.2 Contract Data C1.3 Performance Guarantee C1.4 Agreement in terms of Section 37(2) of the Occupational Health and Safety Act No. 85 of 1993 C1.5 Retention Money Guarantee C1.6 Transfer of Rights	✓

ITEMS SCHEDULED FOR CONSTRUCTION USING LABOUR-INTENSIVE METHODS

The parts of the works that will be constructed using LI methods should be marked in the bill of quantities with the letters LI, either in a separate column or as a prefix or suffix against every item (as illustrated in the table below). The LI-designated works, or parts of the works, are to be constructed using LI methods only. Using a plant to provide such works, other than one specifically provided for in the scope of work, is a deviation from the contract. The items marked with the letters LI are not necessarily an exhaustive list of all the activities which must be done by hand, and this clause does not override any of the requirements in the generic LI specification in the scope of works.

Where minimum labour intensity is specified by the design, the contractor is expected to use their initiative to identify additional activities that can be done by labour-intensive methods to comply with the minimum labour intensity target. Payment for LIC items (either in this schedule or in the Scope of Works) will not be made unless they are constructed using LI methods. Any unauthorised use of a plant to carry out work, which should be labour-intensive will not be condoned and will not be certified for payment.

8. ITEMS SCHEDULED FOR CONSTRUCTION USING LABOUR-INTENSIVE METHODS

Those parts of the Works to be constructed using labour-intensive methods are marked in the Schedule of Quantities with the letters LI, either in a separate column or as a prefix or suffix against every item so designated. The Works or parts of the Works so designated are to be constructed using labour-intensive methods only, unless otherwise specified in the Scope of Work.

The items marked with the letters LI include:

- (a) Items in the COLTO Standard Specifications that would normally be carried out using labour-intensive construction methods.
- (b) Items in the COLTO Standard Specifications that would normally be carried out using plant but which have been modified specifically so as to require the use of labour-intensive construction methods instead of plant for some or all of the work components of the item.
- (c) New items that have been written for this contract specifically requiring the use of labour-intensive construction methods rather than plant for some or all of the work components of the item.

The items marked with the letters LI are not necessarily an exhaustive list of all the activities which could be carried out using labour-intensive methods. Where a minimum percentage for local labour content is specified, additional activities may need to be identified to be carried out using labour-intensive methods rather than plant in order to meet such target.

PART C2: PRICING DATA	EPWP GL reference
C2.2 Schedule of Quantities	Para 5.6, p 15

ITEM	DESCRIPTION	LI	UNIT	QUANTITY	RATE (R)	AMOUNT R c
B17.01	Clearing and grubbing	LI	ha	15		

10.10 Re-Alignment Example

ITEM No	PAY REF	DESCRIPTION	UNIT	QTY	RATE	Total
SECTION K: BUILDING WORKS						
SUBSTATION BUILDING						
K1	SANS 1200 D	Earthworks & Preparation				
K1.1	LI	Restricted Excavation to trenches including intermediate material strip footings, backfill and compact to 95% MOD AASHTO Max. Dry density (100% if sand) and spoil on site	m3		100	
K1.2	LI	Import and place 150 mm G5 material, compacted to 95% MOD AASHTO Max. Dry density, under solid floor	m3		25	
K8		Brickwork				
K8.1	LI	75 mm wide brickwork - both faces, plastered and painted. Rate include brickforce at every fourth course. (Above floor)	m2		50	
K8.2	LI	125 mm wide brickwork (Engineering bricks) to external cable trench - both faces pointed	m2		105	
K 11	LI	Painting				
		Prepare and apply one filler coat, one undercoat and two coats "Pascon" acrylic emulsion paint for: (as per specification on Architect Drawing PE 265/141)				
K11.1		Plaster walls				
K11.1.1	LI	Plaster Band (Pebble Beach)	m2		30	
K11.2	LI	Plaster walls				
K11.2.1	LI	Plastered walls (Oatmeal)	m2		220	
K11.2.2	LI	Plastered soffit	m2		90	
SECTION L: MECHANICAL WORKS						
LI1		Inlet works				
L1.1	PSXE	Supply & install stainless steel, handwheel operated sluice gates, 750mm (W) x 1800mm (D) to fit flush with channel wall with all necessary fittings	No		2	
SECTION M: PUMPSTATION PIPEWORK						
M1		New Aerobic Reactor to WAS - Line 33 Drawing 408703/210P				
M1.1		Suction Pipework				
M1.1.1		PS1 - Reducer - 100x80 ND concentric reducer welded to 650mm No long x 100ND, final site measure, P.E spool piece. 80 end flanged to suit pump suction flange.	No		2	

ITEM NO	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Brought forward				
33.07LI	Removal of unsuitable material (including free-haul of 0,5km)	m ³	-		Rate Only
33.09	Material bladed to windrow	m ³	-		Rate Only
33.10	Roadbed preparation and the compaction of material:				
	(a) Insitu treatment by shaping and compaction to 90% of modified AASHTO density	m ³	-		Rate Only
	(b) Ditto compaction to 93% of modified AASHTO density	m ³	1,200		
33.11LI	Finishing-off cut and fill slopes, medians and interchanges				
	(a) Cut slopes	m ²	-		Rate Only

Clause Number	Data Wording	Align
	PART C3: SCOPE OF WORKS	
	C3.1 Standard Specifications	✓
	C3.2 Project Specifications	✓
	C3.3 Particular Specifications	✓

Clause Number	Data Wording	Align
	PART C3: SCOPE OF WORKS	
	C3.1 Standard Specifications	✓

- Standardized Specifications for Civil Engineering Construction SANS 1200
- The National Building Regulations SABS 0400
- Construction and Management Requirements for Works Contracts SANS1921-1

PART C3: SCOPE OF WORKS
C3.2 Project Specifications

Part A general description of the Works, the Site and the requirements to be met.

Part B contains variations, amendments and additions to the Standard Specifications and, if applicable, the Particular Specifications.

1. Employers Objective

The employer's objective is to deliver public infrastructure using LI methods by EPWP guidelines.

2. Labour-Intensive Works

This method of construction and maintenance involves a mix of labour and machines without compromising on quality, where labour is the primary resource supported by plant and equipment for activities that cannot be feasibly done by labour alone. LI work shall be constructed/maintained using local workers who are temporarily employed in the scope of work.

Labour-Intensive construction methods

Works to be carried out under supervision using LIC methods, designated as LI items in the bill of quantities, include, but are not limited to:

(List of activities applicable to the project/contract)

- Clearing and grubbing
- Excavation up to 1,5 m deep
- Excavation for structures open drains
- Bedding, selected fill, backfilling and compaction of all trenches
- Mixing and placing of concrete for drains and sidewalks
- Mixing and placing of concrete for minor drainage structures
- Mixing and placing of concrete for concrete edge beams
- Stone pitching
- Installation of prefabricated kerbs
- Construction of all brickwork for drainage structures and inspection chambers
- Erection of falsework and formwork
- Fixing of reinforcement

Particular / generic specifications

As well as the 'Amendments to the Standard Specifications' contained in Part B of Section C3.2: Project Specifications, of this document, the following Particular Specifications as contained in Section C3.3, are applicable to this Contract:

Part C: Environmental Management Specification

Part D: Daywork

Part E: OHSA 1993 Health and Safety Specification

Part F: Requirements of the Expanded Public Works Programme (EPWP)

Part G: Small Contractor Development

PART C3: SCOPE OF WORKS C3.3 Particular Specifications

PART F: Requirements of the Expanded Public Works Programme (EPWP)

F1. EXPANDED PUBLIC WORKS PROGRAMME (EPWP)

F1.1 Labour-intensive construction, supervision and management for the Expanded Public Works Programme (EPWP)

The Expanded Public Works Programme (EPWP) is a multi-sectoral government initiative to create jobs. In the case of the infrastructure sector, existing government expenditure is realigned using labour-intensive technologies to create job opportunities. This method of construction and maintenance involves a mix of labour and machines without compromising on quality, where labour is the primary resource supported by plant and equipment for activities that cannot be feasibly done by labour only.

All work undertaken in terms of the EPWP shall be implemented using LI construction methods in accordance with the Guidelines for the Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP) Third Edition 2015” (or its latest edition).

Items scheduled for LI construction are marked with the letters “LI” in the schedule of quantities in the manner described in C2.1 Pricing Instructions.

Contractors should note that they must employ supervisory and management staff that have completed the required Skills Programme in terms of **Appendix C of the aforementioned guidelines**:

- Site agent/construction manager at NQF level 5 “Manage Labour-Intensive Construction Processes” or equivalent Quality Council for Trades and Occupations (QCTO) qualifications.
- Foremen/supervisors at NQF level 4 “National Certificate: Supervision of Civil Engineering Construction Processes”

F1.2 Labour laws applicable to the EPWP

Basic Conditions of Employment Act of 1997 by Minister of Labour in Government Notice No. R949 of 22 Oct 2010

Code of Good Practice for Employment and Conditions of Work for Expanded Public Works Programmes (EPWP), issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice No. 129 of 18 February 2011 (Government Gazette No. 34032 of 18 February 2011)

Ministerial Determination 4: Expanded Public Works Programmes, issued in terms of the Basic Conditions of Employment Act of 1997 by the Minister of Labour in Government Notice No. R347 of 4 May 2012.

PART C3: SCOPE OF WORKS	
C3.3 Particular Specifications	
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F1.3	Persons to be employed under the Expanded Public Works Programme (EPWP)- Recruitment Guideline; Demographics (60 % Women 55% Youth 2% People with disability)
F1.4	Contract of employment with persons employed under the Expanded Public Works Programme (EPWP), (Contractor shall enter into a formal contract of employment with each person employed under the Expanded Public Works Programme (EPWP))
F1.5	Employment of targeted labour under the Expanded Public Works Programme (EPWP)- Workers briefed on Conditions of work/contract, Wage rate, Task Work System, etc
1.6	Training of persons employed under the Expanded Public Works Programme (EPWP)

PART C3: SCOPE OF WORKS	
C3.3 Particular Specifications	
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F1.7	Contractor's obligations towards persons employed under the Expanded Public Works Programme (EPWP)-Compensation for Occupational Injuries and Diseases Act (COIDA) and Unemployment Insurance Act (UIF)
F1.8	Apparel and tools for persons employed under the Expanded Public Works Programme (EPWP). (Provision of PPE, branding per EPWP directives,)
F1.9	EPWP contract signboard (Erection of project sign board,,)
F1.10	Payment matters relating to the EPWP work
F1.10.1	General
F1.10.2	Payment for labour-intensive components of the work

PART C3:	SCOPE OF WORKS
C3.3	Particular Specifications
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F1.10.2 Payment for labour-intensive components of the work	
Payment will be made for items which are designated for labour-intensive construction in the schedule of quantities only in those instances where such items are constructed using labour-intensive methods.	
Any unauthorised use of plant to carry out work which was scheduled to be carried out using labour-intensive methods will not be condoned and any Works so constructed will not be certified for payment. Any non-payment for such Works shall not relieve the Contractor in any way from his obligations either in contract or in delict.	

PART C3:	SCOPE OF WORKS
C3.3	Particular Specifications
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F1.11 Penalty applicable to any shortfall in the local labour content achieved. (The Contractor is obliged to commit to or exceed the specified minimum percentage of local labour content stated in section C1.2.2 Contract Data, Part A: Data Provided by the Employer).	
F2.	NATIONAL YOUTH SERVICE (NYS)
F3.	JOB CREATION REPORTING FOR EPWP
F3.1	Type of project data required per project

PART C3:	SCOPE OF WORKS
C3.3	Particular Specifications
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F3.1 Type of project data required per project	
F3.1.1 Participant (local labour) data	
<ul style="list-style-type: none"> ▪ Participant identity - name, surname, initials, date of birth and identity number (or other unique identifier) plus certified copy of ID book. ▪ Participant profiles - nationality, gender, age, education level and disability status. ▪ Work data for participants - daily wage to be received, number of calendar days training attended and number of calendar days worked. ▪ Records of training - as required in terms of the EPWP Data Collection Tool templateData Collection tool.docx 	

PART C3: SCOPE OF WORKS
C3.3 Particular Specifications

PART F: Requirements of the Expanded Public Works Programme (EPWP)

F3.1.2 Project work data

- Daily attendance register – register for each day showing all the workers that were registered as being at work on that day (completed on site on a daily basis and signed off by the Contractor on a weekly basis).
- Summary of monthly attendance

PART C3: SCOPE OF WORKS
C3.3 Particular Specifications

PART F: Requirements of the Expanded Public Works Programme (EPWP)

F3.1.3 Project payment data

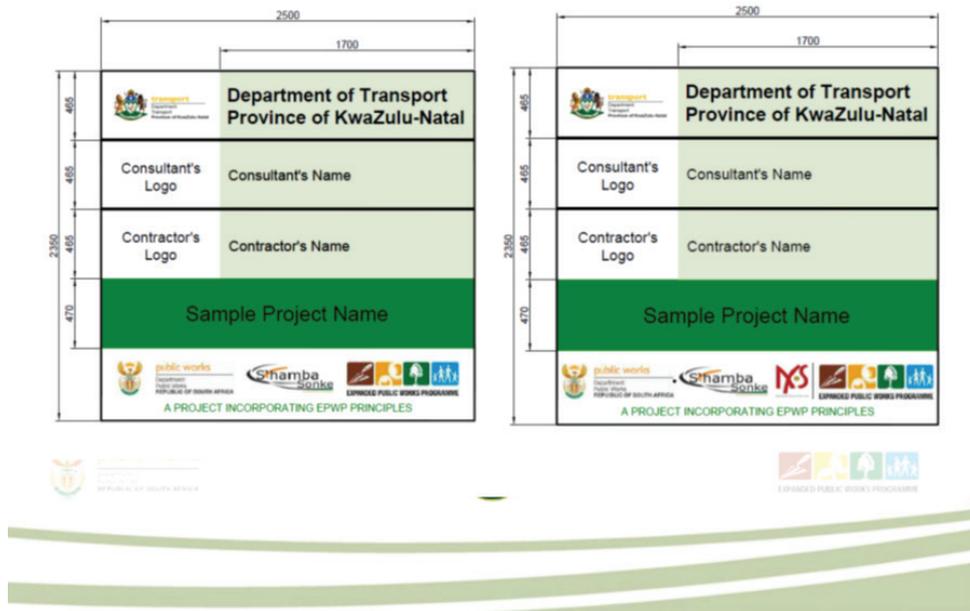
- Payment register - list of the workers showing the wages paid to each worker, and signed off by each worker as proof of receipt and acceptance of payment (must include the name of the worker, either an identity number or other unique identifier, the number of calendar days that the pay period covers, the wage rate and the total wages paid; or
- Bank records showing the transfers to each worker account, signed off by the Contractor as proof of payment - these bank records must specifically show the name of the worker, either an identity number or other unique identifier, the period which the pay covers and the total wages paid.

PART C3: C3.3	SCOPE OF WORKS Particular Specifications
PART F: Requirements of the Expanded Public Works Programme (EPWP)	
F3.1.4 Employment output data	
<ul style="list-style-type: none"> ▪ Number of work opportunities ▪ Number of person-days of work ▪ Number of Full Time Equivalents (FTE) ▪ Training information. 	
F3.2 Project data to be submitted with the Contractor's payment certificates	
<ul style="list-style-type: none"> • Copies of the signed contracts • Certified ID copies • Attendance registers • Proof of payment • Information as required in terms of the EPWP Data Collection Tool template. 	
F4. PROVISION OF STRUCTURED TRAINING	

Clause	Data Wording	Align
	PART C4: SITE INFORMATION	
C4.1	Locality Plan	
C4.2	Example of Contract Signboard Details	✓
C4.3	Existing Services Report (delete if not required)	
C4.4	Conditions on Site: Materials Information (delete if not required)	
C4.5	Traffic Information(delete if not required)	
C4.6	Any other relevant technical reports (delete if not required)	

Clause	Data Wording	Align
	PART C4: SITE INFORMATION	
C4.2	Example of Contract Signboard Details	✓

Project Signboard



10.11 Session Close



For more detail...

More information on what you have learned in this session can be found in the:

- Guidelines for the Implementation of Labour-Intensive Infrastructure Projects Under the EPWP (3rd edition), 2015, or its latest edition.

Session 11 : Elective 4 – Costing of LI Works

Session Objectives:

By the end of this session participants will be able to:

- Understand costing principles and relate these to the costing guidelines for LI works
- Apply costing of LI works activities to their LIC projects

11.1 What are the Guidelines for Costing Labour-Based Road Works?

- The guidelines were prepared in response to the issue of drastic variations of costs for infrastructure investment projects.
- For example, the costs of road per km in different locations is illustrated below.

Why Variations? Assets of similar features

Case: 2009 Roads Scenario for Provinces

Province 'A': R1.8 mill/km.



Province 'B': R3.5 mill/km.



Province 'C': R9.5 mill/km.



Province 'D': R105.7 mill/km.



Issues:

- Cost Drivers
- Benchmarks
- Norms, Values, Benchmarks, Systems Methodologies
- More uniform value for money

Source: ILO LIC training materials, 'Overview of Costing Guideline for LI Works'.

- There are considerable variations in costs between provinces, municipalities and similar projects. Therefore, costs must be appropriately benchmarked so variations can be accounted for.
- The guideline attempts to address this by providing a transparent process of developing realistic rates for LI projects under the EPWP and have been prepared to guide:
 - Contractors; Vuk'uphile Contractor Development Programme and Existing Contractors
 - Implementing Bodies; Project Managers, and
 - Consultants

The guideline can also be used for machine-based projects.

11.2 What are the Causes of Costing Disparities?

1. Flaws in Engineer's Estimates

Some consultants and PMs produce unrealistic unit rates and engineer's estimates due to:

- An inability to appropriately assess costs, sometimes using guesswork or unreliable cost data
- Undertaking 'office design' without visiting the project site and considering prevailing site conditions that have a bearing on the cost.
- Deliberate attempts to inflate project costs to exploit and maximise profits by consultants
- Project managers' absolute reliance on consultants

The above results in over/under-pricing, leading to astronomical variation orders and project cost variations.

2. Contractors colluding in bidding

- For example, as seen in World Cup Stadia projects

3. Survival problems of Emerging Contractors

- Emerging contractors with limited financial resources need to win tenders regularly and make reasonable profits to stay in business. However, this is often not the case due to a contractor's inability to assess costs and prepare a proper bid, instead using guesswork.
- For such contractors, bidding too high means not getting any projects, while bidding too low leads to financial problems.

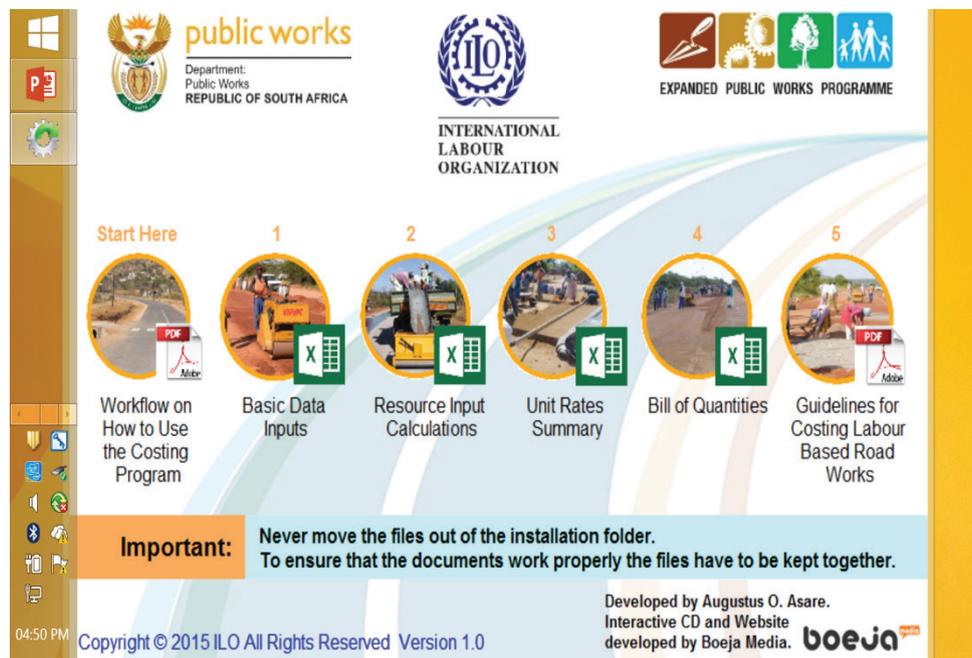
11.3 Excel Program

DPWI/ILO has designed an Excel Program to assist with calculations to avoid issues identified above, particularly those relating to an inability to assess costs accurately. The Program consists of four (4) Workbooks:

1. Basic data Inputs—where all data are entered
2. Resource Input Calculations—for all calculations
3. Unit Rate Summary—results of Unit Rates
4. Bill of Quantities [BoQ]—links Unit Rates to Bill Quantities to prepare Bills of Quantities

Always accept updates of the workbooks when prompted.

The front page of the Program outlines the four Workbooks, as shown below:



11.4 Overview of the Workbooks



This overview shows what worksheets are included in each workbook, and these are outlined in more detail in the sections below.

Workbook 1. Basic Data Inputs (5 Worksheets)

1. Labour, Materials, Plant/Equipment Input Worksheet
2. 'All-In-Wage' Worksheet
3. Mark-Up Worksheet
4. Site Support Worksheet
5. Hand Tools Worksheet

Workbook 2. Resource Input Calculations

Several Worksheets, user input not required

Workbook 3. Unit Rate Summary Calculations (6 Bills Worksheets)

- Bill 1. Setting Out and Clearance
- Bill 2. Earthworks
- Bill 3. Concrete and Drainage Structures
- Bill 4. Borrow Material and Pavement Layers
- Bill 5. Haulage and Compaction
- Bill 6. Sealing Works

Workbook 4. Bill of Quantities Workbook

Eight (8) Worksheets linked to Workbook 3. Unit Rate Summary Calculations

11.5 Workbook 1. Basic Data Inputs



1. Labour, Materials and Plant/Equipment Input Worksheets

- The user inputs the currency of prices and rates.
- The user inputs the prevailing/applicable daily wage rate, which should comply with EPWP guidelines for unskilled and semi-skilled workers.
- Determine and input the plant and equipment hire rates.
- Collect market prices for materials and input the data.
- Determine and input the Distances for Haulage of Materials from supplier sources to sites.

Care must be taken to determine the above, ensuring the developed unit rates are realistic.

2. All-In-Wage Worksheet

- Insert transport cost per worker (if applicable).
- The contractor's mark-up, hand tools, and site-support costs will be automatically calculated from other worksheets.
- User to input overhead costs and profit margin (both in percentages).

3. Mark-up Worksheet

Calculation of production time mark-up in terms of:

- Time loss due to unproductive days
- Site accidents/injuries and medical costs
- Unemployment Insurance Fund (UIF)
- Compensations for Occupational Injuries and Diseases Act (COIDA)

4. Site Support Worksheet

Calculate site support as a percentage of an unproductive workforce to a productive one.

5. Hand tools Worksheet

Calculate the cost of hand tools per worker per day as a percentage of the minimum wage.

11.6 Workbook 2. Resource Input Calculations



- This workbook contains several worksheets.
- Each worksheet is used for calculating all resource input costs (labour, materials, and plant/equipment) to determine the unit rate of that bill item.
- The user does not need to make any inputs on these worksheets.

11.7 Workbook 3. Unit Rate Summary Calculations

- Contains 6 bill worksheets in order of LIC operations:
 - Bill 1 - Setting Out and Clearance
 - Bill 2 - Earthworks
 - Bill 3 - Concrete and Drainage Structures
 - Bill 4 - Borrow Material and Pavement Layers
 - Bill 5 - Haulage and Compaction
 - Bill 6 - Sealing works
- Bills 1, 2, 3, & 4 (Labour-only bill items)
 - Requires user to select and insert from a drop-down list the appropriate task rate for each indicated (highlighted) bill item based on actual site conditions and with guidance from Task rate tables obtainable from LIC/EPWP Guidelines/Manuals (e.g. websites: CIDB www.cidb.co.za and EPWP: www.epwp.co.za).



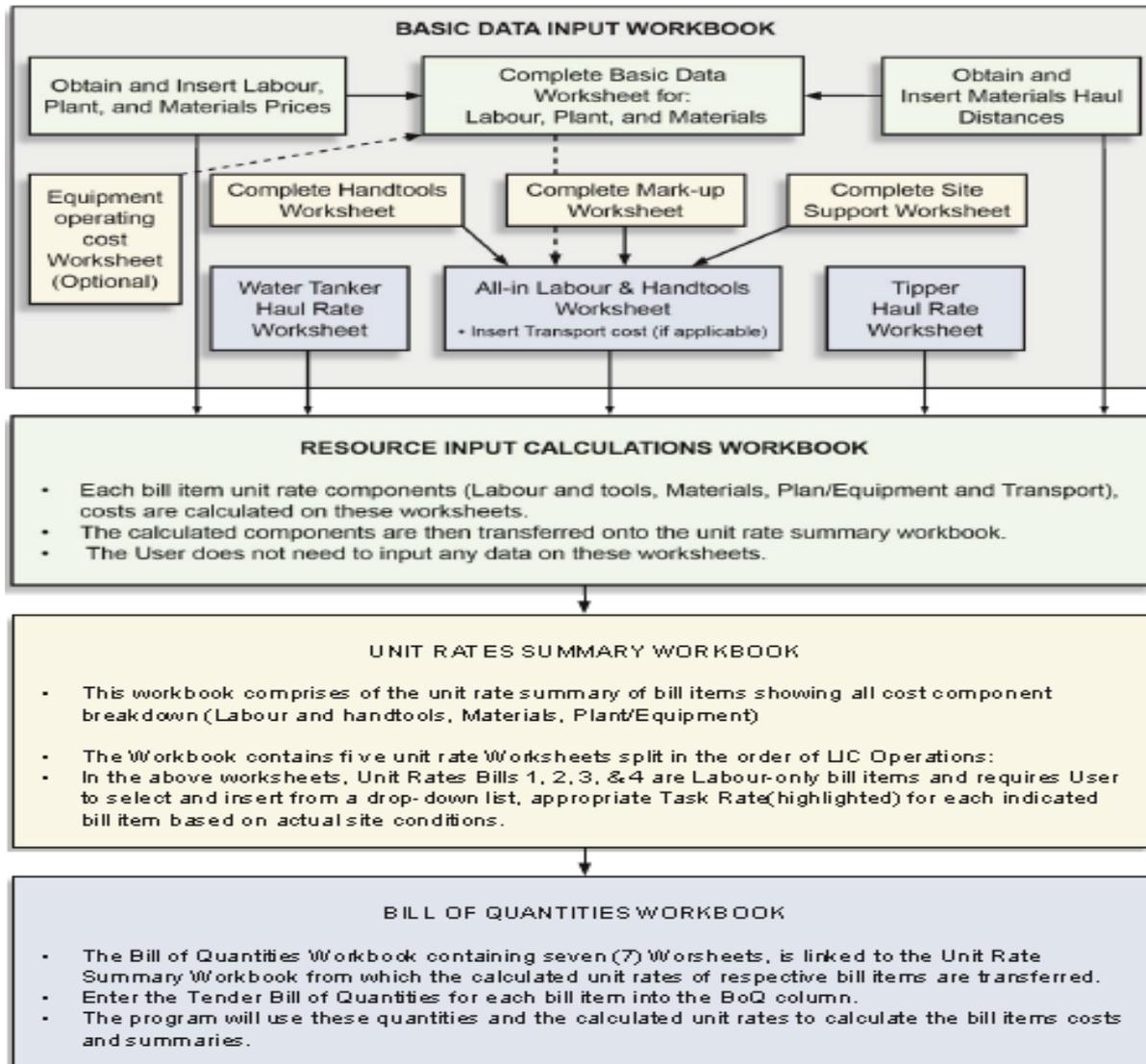
11.8 Workbook 4. Bill of Quantities

- The Bill of Quantities Workbook containing eight (8) worksheets, is linked to the Unit Rate Summary Workbook from which the calculated unit rates of respective bill items are transferred.
- The quantities for each bill item as per the tender are to be entered for the program to use these quantities and the calculated unit rates to compute the bill item costs and summaries.



11.9 Diagram 16: Workflow on How to Use the Excel Program

The diagram below illustrates how to work through the process of using the 4 Workbooks identified above.



Source: ILO LIC training materials, ‘Overview of Costing Guideline for LI Works’.

The following section presents principles when conducting cost estimates to assist with the abovementioned process.

11.10 Why Do We Need Estimates?

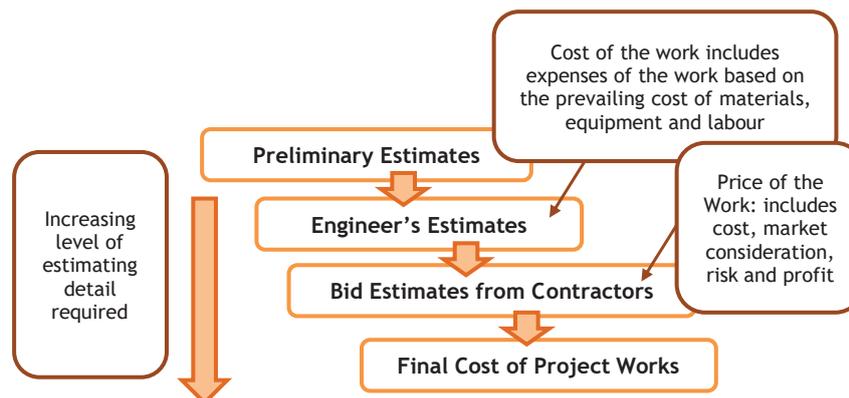


Estimating the cost for infrastructure projects is a structured process based on practice and experience from inception to final completion of the project. It is important to understand the principles of costing. Estimating can help to:

- Prepare a tender/cost estimate for a project:
 - The client body (engineer's estimates) can show how much the project will cost and compare alternatives
 - Contractors can successfully prepare a tender and secure the job
- Plan a project:
 - Enables the client body to realistically budget for a project
 - Enables project control
 - Allows the preparation of a cash-flow analysis
 - Financial planning: Source of financing, cash flow
 - Construction: Control implementation progress and expenditure
- Project financing:
 - Allows the contractor to establish a source of financing, such as a bank loan and to forward a cash flow forecast to financiers.
- Project construction:
 - Enables the control of project progress and expenditures (cost overruns).

11.11 Diagram 17: Estimating

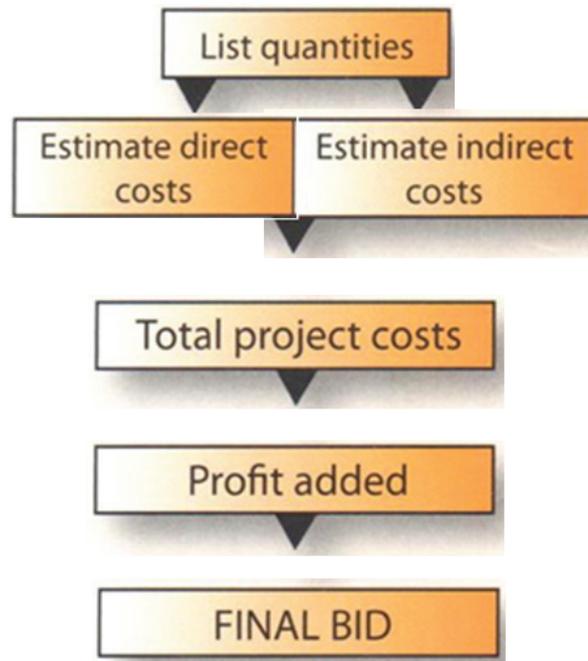
The estimating process commences at inception and continues to final works with more detail required during the project phases.



Source: ILO LIC training materials, 'Principles of Cost Estimating'.

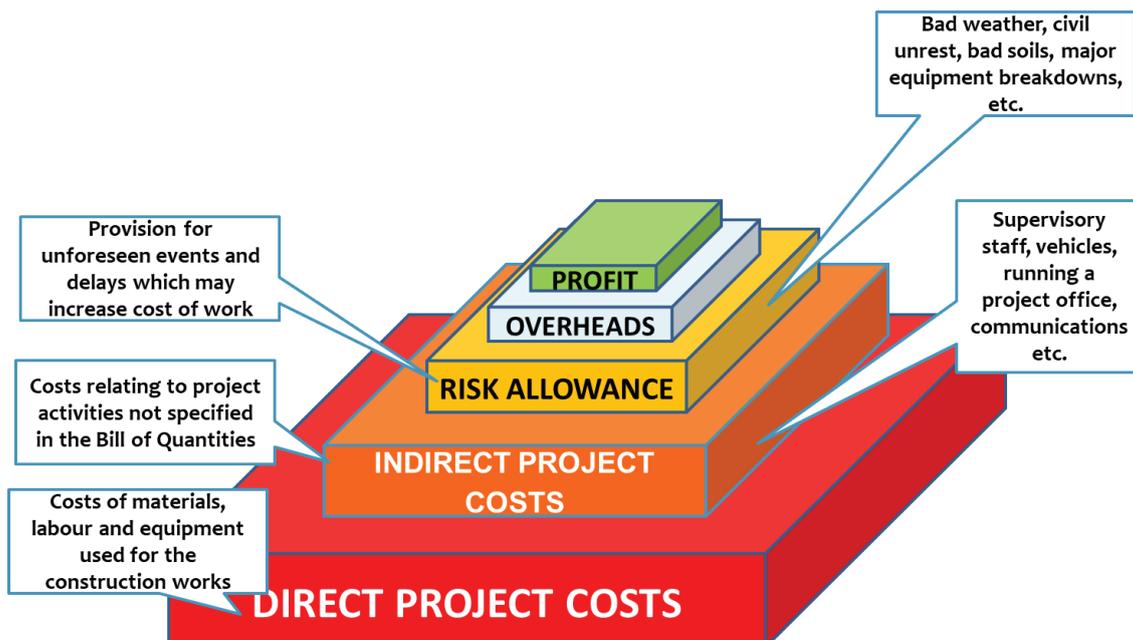
11.12 Diagram 18. The Estimating Process

For normal tenders prepared by contractors, the tender sum for any work item is calculated using the procedure shown in the diagram. If you prepare a cost estimate for a project to be implemented in-house using your own agency workforce (force account) and resources, you will use the same system, but you may not add the profit to arrive at the final cost.



Source: Technical Brief No.2 Principles for Project Cost Estimating, DPWI/ILO

11.13 Diagram 19: Cost Components



Source: ILO LIC training materials, 'Principles of Cost Estimating'.

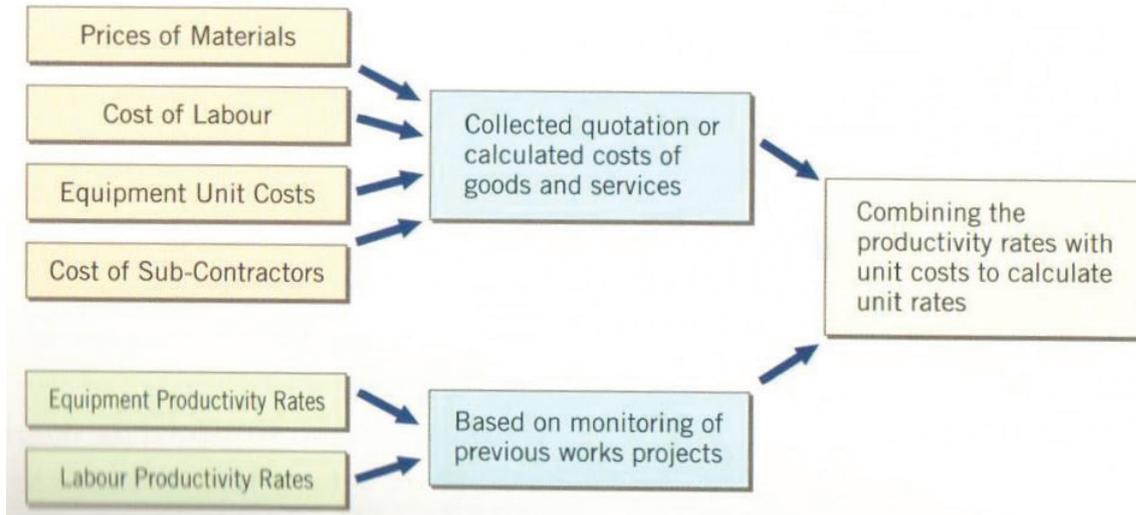
11.14 Table 27. Examples of Cost Components

Cost Component	Description	Examples
Direct Costs	Costs directly linked to the activities required to do the work.	<ul style="list-style-type: none"> • Labour • Equipment and tools • Material • Transportation of material and equipment
Indirect Costs	Costs incurred that are not directly linked to the works but have to be recovered by the contractor doing the works.	<ul style="list-style-type: none"> • Site camp facilities • Insurance • Bonds • Road signs • Safety measures (protective equipment) • General transport, support or standby equipment • Tendering costs • Accommodation • Salaries, allowances and expenses for supervisory staff • Hire of support equipment
Risk Allowance	Provision for unseen events and delays which may increase the cost of the work (contingencies).	<ul style="list-style-type: none"> • Bad weather • Work to be redone • Civil unrest • Delayed payment • Rising prices • Breakdown of major equipment
Company Costs (Overheads)	<p>Costs that a contractor must cover to keep running.</p> <p>Note that a proportion of costs, such as company facilities are covered by each contract. Also, depreciation/replacement can be factored into the equipment cost when calculating the direct costs.</p>	<ul style="list-style-type: none"> • Company facilities such as offices, stores, workshops. • Interest on loans, e.g. a bank loan to procure equipment or facilities. • Depreciation or replacement of equipment and facilities. • General expenses such as stationery for administration, electricity bills for office • Costs for training of staff. • Bookkeeping, accountants and auditor's fees.
Profit	Profit is over and above direct and indirect costs. It is often a percentage mark-up on the total direct and indirect costs. The actual percentage is influenced by factors such as competition in your construction industry and company size.	<ul style="list-style-type: none"> • Sometimes a contractor may add a profit margin (e.g. 10%) to the project cost to remain competitive.

Source: Adapted from Technical Brief No.2 Principles for Project Cost Estimating, DPWI/ILO

11.15 Diagram 20. Unit Rate Calculation for a Labour-Intensive Project

Calculating unit rates for LI projects follows the same principles as for equipment-intensive projects, but with more emphasis and details on estimating labour-related items from first principles.



Source: ILO LIC training materials, ‘Principles of Cost Estimating’.

11.16 Self-Costing Exercise

Choose own activity and cost accordingly

Steps involved include:

1. Quantity take-off
2. Unit pricing and analysis, the process of determining how much:
 - (i) Each unit will cost to produce
 - (ii) To deliver to the site
 - (iii) To install in the correct position and
 - (iv) Maintain until the project is turned over to the owner

This entails the following components/considerations:

- Material costs
- Labour costs
- Equipment costs
- Overhead
- Profit
- Tax

Component	Detail	Cost
Direct Cost		
In-Direct Cost		
Risk Allocation		
Overhead		
Profit		

11.17 Table 28. Cost Estimating–Planning Checklist

Before starting to price the bill item, plan the work to be carried out in your mind. The following should be considered:

Item	Tick when done	Remarks
1. Decide on overall strategy on how to organise and carry out the works, including general methodology to be used.		
2. List all activities you plan to undertake in order, including preparatory and support activities.		Example: security services, tools maintenance.
3. For each activity, estimate the resources required and calculate the time necessary to complete the task.		If it is your first contract, consult standard rates.
4. Decide on site organisation arrangements, for example, numbers of supervisors, work teams, support etc.		
5. Draw up a preliminary works programme.		
6. Prepare a schedule of all the resources required.		
7. Check the availability of the required workforce, equipment and materials requirements—internal and external.		If requiring procurement of new equipment, check realistic procurement period.
8. Identify critical activities that can have serious financial consequences on project. e.g. late delivery of tipper truck.		

Source: Adapted from ILO LIC training materials, 'Principles of Cost Estimating'.

After planning the works, one can then start adding a price to the bill items, knowing the current market prices of labour, materials, equipment and transport costs. It is equally important to know the company's overheads (indirect costs).

11.18 Information Required for Pricing

Studying the tender documents

- Seek clearance from client of anything unclear in the documents.
- Note contract period, method of payment and time for payment of interim certificates.
- Payment for materials on site? price fluctuation clauses?
- Insurance and indemnities.
- Liquidated damages/penalties.
- Time extension.
- Termination and arbitration clauses.

Site Visit

Site visit is the only way to determine actual site conditions and their influence on pricing. The following should be noted during a site visit:

- Terrain, vegetation and soil conditions, for example, is it hilly, rolling or flat? is the soil loose, medium or hard/rocky? Answers will help in realistic choice of task rates for pricing clearance and excavation activities.
- Investigate designated quarries and assess:
 - The quality and variability of the material
 - Prepare an outline sketch of quarry with its features
 - Note environmental requirements
 - Note if there is quarry access and its condition
- Probable sources of local materials
 - e.g. water, sand, aggregates
- Possible location of site camp(s)
 - Enquire potential cost of renting land for camp or existing premises
- Undertake market survey for:
 - Local labour availability and daily wage
 - Nearest sources of suppliers and prices of materials (like cement, fuel, gabions), plant/ equipment hire rates
- Notify client of any tender document omissions discovered and clarifications

The following costs should also be noted for P&Gs:

- Transport costs for mobilisation/demobilisation and supervision
- Insurance and bonds, i.e. premiums for contractors' All-risk, Workmen's Compensation, Performance Bonds/Securities
- Establishment of site camps
- Protective clothing and first aid
- Gravel compensation/acquisition
- Cost for testing of materials

11.19 Unit Rate Calculation

Unit rate is calculated by the total cost divided by the total quantity. There are two options for calculating unit rate, as shown below:

Option I:

Unit Rate = Labour Cost + Material Cost + Equipment Cost

- Note that in the above formula, the cost components are inclusive of overheads and profit.

Option II:

Unit Rate = Labour Only + Material Only + Equipment Only + Overhead + Profit

- In calculating the unit rate, the unit of measurement of the Bill item, as stipulated on the blank BoQ should be maintained.

Your trainer will illustrate these points through an example that has been included in the PowerPoint slides for this training.

11.20 Calculating Labour Cost

Labour Cost = All-in daily rate x Productivity

An all-in daily rate considers holidays, leave and allowance for bad weather.

1. Calculate all-in daily labour rate comprising:

- Contractor's mark-up (risks)
- Site support staff
- Hand tools
- Overheads and profits

An all-in daily rate should be sufficient to include:

- Current labour wages attractive enough to secure required recruitment of labour
- Provide incentive to achieve good work outputs

2. Select the appropriate task (productivity) rate for the activity.

- **Tip:** Estimate with average production rate (average performance over a period of time including loss of production, disruptions, equipment failure) which may be 20-40% lower than the task rates.

11.21 Table 29. Calculation of All-In Daily Rate

1. WAGES AND TRANSPORT						
MINIMUM WAGE				80.00	R DAY	
TRANSPORT (% OF WAGE)				-		
TOTAL WAGE INCL. TRANSPORT				80.00	R DAY	
2. SITE ALLOWANCE						
TOTAL MARK-UP ON BASIC WAGE		8.8%				
SITE SUPPORT		13.4%				
HANDTOOLS		3.9%				
TOTAL SITE ALLOWANCE		26.1%				
AMOUNT SITE ALLOWANCE =						
	80	x	26.1%	=	20.89	R DAY
			100%			
DIRECT DAILY LABOUR RATE				=	100.89	R DAY
3. CONTRACTOR ALLOWANCES						
OVERHEAD		15%				
PROFIT		10%				
TOTAL CONTR. ALLOWANCE		25%				
AMOUNT CONTRACTOR ALLOWANCE =						
	100.8918	x	25%	=	25.22	R DAY
			100%			
					126.11	R DAY
"ALL-IN" TOTAL DAILY LABOUR RATE						
					126.11	R DAY

Source: ILO LIC training materials, 'Principles of Cost Estimating'.

11.22 Table 30. Example: Calculating Labour Cost for Combined Activities

Example: To find the labour cost for building 1m³ of cement stone masonry wall

Sub-Activity	Unit	Quantity/m ³		Task Rate		Productivity	
		(Unit/m ³)		(Unit/W'kday)		(W'kdays/m ³)	
Collect, Load & offload stone	m ³	1.20	m ³	2.50	m ³	0.480	
Load & offload Sand	m ³	0.36	m ³	5.00	m ³	0.072	
Load & offload Cement	Bag	2.00	Bag	50.00	Bag	0.040	
Mix Mortar (by hand)	m ³	0.20	m ³	1.00	m ³	0.200	
Build Masonry	m ³	1.00	m ³	0.50	m ³	2.000	
Backfill Structure	m ³	2.00	m ³	2.00	m ³	1.000	
Total Labour Input Item No.						3.792	

Source: ILO LIC training materials, 'Principles of Cost Estimating'.

$$\begin{aligned}
 \text{Labour Cost} &= \text{All-in daily rate} \times \text{Productivity} \\
 &= 119.26 \times 3.792 \\
 &= \underline{\underline{\text{R } 452.23/\text{m}^3}}
 \end{aligned}$$

Note: Use productivities not task rates (task rates cannot be added. Only productivities can be added/summed up)

11.23 Table 31. Calculating Labour (Only) Rate (Worked Example)

Item Description	Unit	Quantity <i>a</i>	Task rate <i>b</i>	No of workers days <i>c=a/b</i>	Labour rate <i>d</i>	cost <i>e=c x d</i>	Unit rate <i>f=e/a</i>
Bush clearing by hand	m ²	30,000	250	120	119.26	14,311	0.48
Grubbing by hand	m ²	15,000	100	150	119.26	17,889	1.19
Excavation by hand							
Drain Excavation (in medium material)	m ³	4500	2.5	1,800	119.26	214,668	47.70
Excavation to Level (in soft material)	m ³	4200	3.5	1,200	119.26	143,112	34.07
Excavation (in hard material)	m ³	1500	1.2	1,250	119.26	149,075	99.38
Spreading to Camber	m ²	30000	60	500	119.26	59,630	1.99

Source: ILO LIC training materials, 'Principles of Cost Estimating'.

11.24 Calculating Tool Cost

There are two options for calculating tool costs, as follows:

Option 1: Cost of tools based on project (refer to average tools requirement table below)

Assumptions:

<i>Estimated number of workers</i>	= 120 persons
<i>Estimated average life span of tools</i>	= 6 months (some last longer/shorter)
<i>Days per month</i>	= 21 days

Calculations:

<i>Person days in six months</i>	= $120 \times (6 \times 21) = 15,120 \text{ Wd}$
<i>Cost of tools per Pd</i>	= $R52,330 / 15,120 = R3.46$

Option 2: Cost of tools based on individual task

Assumptions:

Estimated average life span of tools	= 6 months
Cost of hand shovel	= R100
Cost of rake	= R70
Cost of wheelbarrow	= R400
Cost of camber board, spirit levels etc	= R80* (provisional)

Calculations:

<i>Total cost of tools listed above</i>	= R650
Person days in six months	= $1 \times (6 \times 21) = 126 \text{ Pd}$
Cost of tools per Wd	= $R650 / 126 = R5.19$

Source: Technical Brief 2. Principles for Project Cost Estimating, ILO/DPWI.

11.25 Table 32. Average Tools Requirement Table (120 workers)

Item	Quantity	Estimated price per unit (Rands)*	Amount
Hoe	30	60	1800
Pickaxe	70	150	10500
Mattock	100	100	10000
Shovel	30	60	1800
Fish line	10	20	200
Wheelbarrow	20	400	8000
Camber board	4	200	800
Bush knife	10	50	500
Grass cutter	10	30	300
Rakes	15	70	1050
Spreader	15	80	1200
Hand Rammer	10	250	2500
Sledgehammer	5	500	2500
Crowbar	5	200	1000
Spirit level	5	230	1150
Boning Rod	4	170	680
Ranging Rod	30	120	3600
Ditch template	4	350	1400
Line level 5	5	70	350
Various small items	-	-	3000
Total			68,530
* Actual prices to be used			

Source: Technical Brief 2. Principles for Project Cost Estimating, ILO/DPWI.

11.26 Table 33. Calculating the Materials Cost Input

$$\text{Material Cost} = \text{Direct Cost} + \text{Indirect Cost} + \text{Profit}$$

- Determine the quantities of each material required for a unit of the bill item
- Determine the unit market prices of the materials necessary input
- Important to cater for waste
- Add cost of transporting materials to site
- Add indirect cost and profit

PROJECT ROAD No:		BILL 3 DRAINAGE STRUCTURES			
REGION:					
ITEM	DESCRIPTION	UNIT	PRICE PER UNIT INCLUDING TRANSPORT a	ADD WASTE (5%), OVERHEADS(15%), PROFIT(10%) = 30% TOTAL b = 30% x a	UNIT RATE c=a + b
No.					
3.3	Supply of precast concrete pipes.				
3.3.1	ø 600 mm (Class : _____)	m	346.00	103.80	449.80

Source: ILO LIC training materials, 'Principles of Cost Estimating'.

11.27 Calculating Equipment Costs

- Objectives of equipment costing:
 - To accurately reflect the cost of ownership and operation
 - To provide an incentive to use equipment only for those operations for which it is economical
 - To enable the true cost to be recovered over the (*likely*) working life of each item of equipment
- Factors affecting equipment owning and operation/rental costs:
 - Cost delivered to owner
 - Number of hours used per year
 - Number of years used
 - Maintenance and repair cost
 - Demand for the use of the equipment
 - Conditions of use

11.30 Estimating Guidelines for Planning

EPWP Guideline for Capital Project Costing

Description	Average Unit Cost (Estimated costs as at mid 2011)
Low-Volume Road works	
Gravel Road Rehabilitation	R250,000 – 350,000 per km
Gravel Road Construction	R400,000 – 750,000 per km
Sealed Road Construction	R1,000,000 – 3,000,000 per km
Routine Road Maintenance	R10,000 – 30,000 per km per year
Water and Sanitation	
Water Reticulation Construction (without reservoirs)	R 350,000 – 600,000 per km
Water Reticulation Construction (with reservoirs)	R 550,000 – 1,000,000 per km
Sewer Reticulation Construction	R 300,000 – 500,000 per km
VIP Latrine	R 4,500 per Latrine

Example: If a municipality needs to upgrade a 5km low-volume gravel road to surfacing, then from the table above, the budget needed to upgrade the road will be:

5km x R1.0m to 5km x R3.0m = R5.0m to R15.0m

Source: ILO LIC training materials, 'Principles of Cost Estimating'.

11.31 Project Cost Estimating—Summary of Challenges and Tools

Challenges

1. Survival problems of emerging contractors
2. Absence of sufficient information—no site visits
3. Flaws in engineer's estimates
4. Absence of database, record of information on rates, prices

Tools

1. Technical Brief—Principles for Project Cost Estimating
2. Costing Guideline for Labour-Intensive Works

11.32 Session Close



For more detail...

More information about what you have learned in this session can be found in the following resources:

- Technical Brief 2. Principles for Project Cost Estimating, ILO/DPWI.
- Guidelines for Costing Labour-Based Road Works, DPWI/ILO.
- LIC Orientation Training Course: Reference Material, Sections 16, 17, 18.

Conclusion Session

Session Objectives:

By the end of this session participants will be able to:

- Summarise the main topics covered in the training
- Demonstrate understanding of the content of the training, through a short assessment task
- Evaluate the training, by providing feedback on participants' reaction to the training through a short questionnaire.

Training Summary

In this LIC Orientation training, we have learned about the following:

- Meaning and background of EPWP and LIC
- Advantages of LIC and addressing some myths about LIC
- Key LIC terminology, including WO, person/worker days, FTE, LI (%) and task rate
- How to calculate some of the key parameters in EPWP such as WOs and FTEs
- Time-based vs task-based systems of remuneration
- Key sections of the EPWP Implementation Guidelines and how they are relevant
- The phases in the EPWP infrastructure project cycle and key activities and roles
- EPWP Recruitment Guidelines and Guiding Principles
- Ministerial Determination and Code of Good Practice and impacts on EPWP labour
- The EPWP M&E Plan and the EPWP Reporting System (EPWP-RS)

Action Plan

- The entire group will be facilitated to complete an action plan to identify challenges faced in implementing EPWP projects and practical steps you can take to implement what you have learned in this training in the workplace.

Assessment & Evaluation

- You will be asked to complete a short assessment quiz to gauge your understanding of what was covered in the training.
- You will also be asked to complete an evaluation questionnaire to gather information on your reactions to the training, which can be used to improve future training. Follow the link below for the PowerPoint slides :-http://www.epwp.gov.za/EPWP_LIC_Orientation_Course_PowerPoint.pptx

Glossary of Terms

Source: Adapted from the Guidelines for Implementation of Labour-Intensive Infrastructure Projects under the Expanded Public Works Programme (EPWP), 3rd Edition, 2015.

By hand	Refers to the use of tools which are manually operated and powered.
Daywork	Work done that is paid daily in situations where it is impossible to estimate the quantity of the required input in advance. It is usually applied in situations where the quantitative measurement or setting of tasks, including pricing is not possible.
Demographic Characteristics of Workers	The number of workers that fall within the following categories must be recorded: Women, youth (i.e. men and women 16 - 35 years of age), people with disabilities.
EPWP (Expanded Public Works Programme)	A programme to provide public or community assets or services through LI approaches, initiated by government and funded from public resources.
EPWP Integrated Grant	Funds payable to public bodies through a conditional grant to incentivise employment creation under the EPWP.
EPWP Project	A project that incorporates the following elements to the greatest extent possible: Employment creation, LI methods, local resource optimisation (only use equipment for activities that cannot be effectively done using labour), skills development and transfer, community ownership, optimisation of quality, cost and time, decent working conditions, lays foundation for sustainability.
EPWP Target	A target set by the National Department of Public Works and Infrastructure specifying the number of work opportunities and FTEs that a public body should endeavour to create.
Full Time Equivalent (FTE) Employment Created	One person-year of employment. One person year is equivalent to 230 person days of work. The 230 days are effective days of work after subtracting provision for non-productive days in a year (e.g. leave, holidays, etc.).
Group task	A work method whereby tasks are organised based on the number of people completing one task (to produce a defined output in a day).
Identity Documents	Refers to South African identity registration document.
Labour-Intensity	The expenditure on wages expressed as a percentage of the total expenditure on activities implemented labour-intensively.
Labour-Intensive	Methods of construction and maintenance involving a mix of labour and machines without compromising on quality, where labour is the primary resource supported by plant and equipment for activities that cannot be feasibly done by labour only. Note: this is more commonly referred to as 'labour-based' in other countries.
Large Project	An infrastructure project with a value of more than R30 million (including VAT) that involves the use of LI methods on a significant scope of the works to maximise the creation of work opportunities.
Ministerial Determination	A determination issued by the Minister of Labour in terms of the Basic Conditions of Employment Act of 1997. It applies to Expanded Public Works Programmes. The Ministerial Determination must be read in conjunction with the Code of Good Practice for the EPWP.

Person-days (Worker Days)	The number of people who worked on a project, multiplied by the number of days each person worked.
Project Budget	The planned budget on activities to be implemented labour-intensively + the fees for the professional service provider appointed to design and supervise the project. The project budget excludes government management and administration costs.
Project Wage Rate	The daily wage (whether task-rated or time-rated) per individual. This wage rate must be inserted in the project tender document as per the EPWP guidelines.
Public body	A department, state owned entity, constitutional institution, municipality, public entity or municipal entity.
Scope of work	A specification and description of the services or construction/maintenance works that are to be provided and any other requirements and constraints relating to the way the contract is to be performed.
Semi-skilled work	Work requiring a person to have some degree of training or familiarisation with the task to be performed before being able to operate at optimal efficiency.
Task	The amount of work to be performed by a worker to a defined quantity and quality.
Task rate	The amount of work to be performed by a worker to a defined quantity and quality <i>and be completed in a working day</i> .
Unskilled work	Work that does not require a person to have received prior training related to the task to be performed to a satisfactory standard.
Wage Rate	The set wage (whether task-rated or time-rated) to be paid to a worker who completes assigned work for the day.
Work Opportunity	Paid work created for an individual on an EPWP project for <i>any period</i> within the employment conditions of the Code of Good Practice for the EPWP. Learnerships will also constitute work opportunities. The same individual can be employed at different times on different projects (not concurrently) and each period of employment will be counted as a work opportunity.

Annexes

Annex 1. 10 Common Myths about LIC

Annex 2. Checklist for Design of Labour-Intensive Works

Annex 3. Description of Areas Covered in the Ministerial Determination and Code of Good Practice

Annex 4. Consultant's Project Design Compliance Declaration

Annex 5. Consultant's Project Supervision Compliance Declaration

Annex 1. 10 Common Myths About LIC

1. Slow and unproductive?

Speed and productivity depend on several factors such as:

Nature of the activity—some activities lend themselves to use of labour-intensive methods (e.g. bricklaying) and others to use of machines (excavating rocky material)

Project design—a project that is designed for implementation by machines if it is subsequently implemented using labour productivity may be below optimal. Projects should be planned and designed for the appropriate technology choice. You cannot place dough in the oven to bake buns and change your mind halfway through and decide to produce a cake!

Project remoteness from equipment suppliers—for example, in rural, remote or mountainous areas, it is often quicker and more cost-effective to mobilise labour and light/intermediary equipment than move heavy equipment from far urban centres

Community preference—some communities may insist on local service providers, for whom labour and simple tools may be the most productive option

Operating conditions—for example, in mountainous terrain or urban built-up settlements or confined places it may not even be possible to manoeuvre heavy equipment

Number of people employed—it is often possible to achieve the same productivity by deploying the number of people and teams whose combined output per unit of time is equivalent to that of machines. For example,

Equipment based contractor can produce 10km of gravel road in a month
- Add fuel, spare parts

A well-managed contractor using LI methods with 150-200 workers can produce 2 km of gravel road in a month

- 5 LI contractors can produce 10km employing 750 to 1000 people

Source: Technical Brief 6. Common myths about Labour-Intensive Methods, ILO.

2. It compromises quality?

Quality should not be compromised just because implementation uses LI methods. Even machines can produce substandard quality if the incorrect specifications are used for the chosen technology. You cannot judge a fish's core competency by its ability to climb a tree!

Supervision and quality assurance are needful processes regardless of whether machines or labour are used.

3. Expensive?

Quality and cost largely depend on the labour-friendliness of the designs and specifications for implementation.

People often make a financial cost comparison between machine-based and Labour-Intensive methods based on:

- A particular activity e.g. excavating a trench
- Stage of the project cycle e.g. construction or maintenance

Life-cycle costing of the asset is rarely done although it is important for cost-benefit analysis.

Economic cost comparison is rarely done to capture the other benefits of LI methods such as stimulation of the local economy through wages earned, reduction in crime through employment opportunities, improvement of social cohesion through interaction and increase in social capital through networking at work.

International comparative studies carried out by the ILO in the road sector showed that, without compromising the quality of the infrastructure, the LI option:

- Is between 10% and 30% less costly than more equipment-intensive options
- Reduces foreign exchange requirements by some 50% to 60%
- For the same investment, creates between two and four times more employment.
- Indirect income “multiplier” effect estimated at between 1.5 and 2.8 (for example a person employed from the local community may hire another community member to install a fence or support the viability of a local shop).

4. People are a problem and difficult to manage; machines don't go on strike!

There is a misconception that equipment is better because it does not go on strike or argue with the supervisors.

- LI programmes can run smoothly if decent work principles espoused in the EPWP Guidelines are followed, and equipment will work well if serviced and maintained as the manufacturer recommends.
- Most protest actions are created by poor management decisions, such as not following needful working conditions or adequate social facilitation with intended beneficiaries.

5. LI work is hard for human beings

The activities done by labour are no harder than those most people routinely carry out, say, in the agriculture or mining sector.

The approach uses a combination of labour supplemented by equipment for activities that are not practical or cost-effective to do by labour.

How can people manage to do what machines normally do?

- Labour-friendly technical designs
- Work broken down into smaller tasks
- Work organisation per activity
- Adequate management of people

6. It was used during days of slavery!

During days of slavery, people worked hard but were not paid for their effort (forced labour). Working conditions were not designed to be fair and safety was not a priority.

Modern-day LI programmes are expected to embrace decent work principles (e.g. fair and transparent recruitment process, fair wage for a fair day's work, equal pay for work of equal value regardless of gender, freedom of association, safe working conditions) to ensure a fair voluntary exchange of resources between the employer and the employee.

7. LI methods are backward—no one else uses them. Why us?

Even the US, one of the most developed countries in the world, recently resorted to using an employment intensive driven fiscal stimulus.

“The impact of the fiscal stimulus suggests that the (Recovery Act) has raised the level of GDP as of the second quarter of 2010, relative to what it otherwise would have been, by between 2.7 and 3.2 percent”—White House Council of Economic Advisers

The \$865 billion economic stimulus package signed in 2009 by quarter 2 of 2010 had lifted employment by between 2.5 and 3.6 million jobs—White House quarterly report

In 2017 the Trump Administration announced a raft of economic interventions, including to rehabilitate obsolete infrastructure through public employment programmes.

Many other developed and developing economies around the world use Labour-Intensive methods.

8. I already have the equipment; why should I use labour?

LI methods do not mean we should stop using all machines. There is adequate diversity of work that should enable a balanced use of different technology choices.

The critical point of departure is to progressively use our comparative advantage rather than limit ourselves to what we currently have. If a hammer is your only tool, every problem looks like a nail that needs to be hammered!

The concept of Total Factor Productivity (below) explains this paradigm better.

Total factor productivity = labour productivity + capital productivity

There is an optimal combination of labour and capital (e.g. equipment, machinery) that maximises total factor productivity in a particular country.

Labour is an abundant resource that is currently underutilised in South Africa.

Public bodies expect their in-house units and external service providers to contribute to developmental objectives.

9. Ya, but the jobs are temporary!

The EPWP was never intended to offer permanent employment. The EPWP targets people who would otherwise be unemployed and, as such cannot provide the following:

- Permanent employment
- Guaranteed exit strategy for each beneficiary

Some beneficiaries leave with skills for future employability elsewhere

Consider one person employed for life from age 16 to 60, i.e. 44 years or 528 months

Suppose you employ more people, each for six months, i.e. $528/6 = 88$ people

Which option has more impact?

Employing 1 person for life or 88 people each employed for 6 months?

Some people need income for a short duration to permanently escape the poverty trap e.g. someone who fails a qualifying examination and needs money to rewrite the examination to be able to pass and get a permanent job, or someone who needs seed capital to start their own small enterprise.

10. My promotion is not based on creating jobs!

Every public body that receives funding through Treasury is expected to implement EPWP projects. Everybody implementing an EPWP project has a mandate to create work opportunities. People tend to prioritise things that get measured. Contribution to creation of employment should be part of performance appraisal of public officials, otherwise EPWP will be perceived as just an add-on trivial task that can be ignored.

Annex 2. Checklist for Design of Labour-Intensive Works

Question/Consideration
1. Project identification: Is the location of the project suitable for LI construction/maintenance methodology?
2. Earthworks must be designed with consideration of the LI construction/maintenance methodology.
3. Vertical and horizontal alignment of the works (roads, trenches, pipelines and stormwater channels) should be such to optimise cut and fill, minimise deep or hard excavation or areas requiring specialist engineering input for example dewatering or specialist ground stabilisation.
4. During the design of gravel roads, suitable construction material should be sourced near the site of the works.
5. Drawings must be produced and presented in a clear, understandable way. Where setting out information is provided in the form of coordinates it should be backed by methods and not rely on sophisticated surveying instruments, such as offsets measurable with the use of a standard tape. Where possible, appropriate drawings should be produced using a background of ortho photos to provide for easy identification of surrounding features.
6. Are there sufficient resources within proximity of the project (labour and material within 150m to 5000m from project)?
7. Where the haul distance is greater than 150m, and less than 5000m the use of small volume local transport, should be considered.
8. Excavation in material which may constitute a safety hazard for workers should not be done using labour.
9. Is there any preliminary work required prior to Labour-Intensive construction/maintenance methods being implemented?
10. Is the design related and supportive of Labour-Intensive construction/maintenance methodology? For example, appropriate information to facilitate manual setting out of the works or setting out information not reliant on sophisticated survey equipment.
11. All pre-manufactured materials which are incorporated into the works must be sized such that the mass of individual elements does not exceed 320kg. Men should not lift individual loads exceeding 55kg and for women the limit is 35kg.
12. Are the materials required checked so that labour can easily work with them without unnecessary strain?
13. Stone masonry and grouted stone pitching should be included wherever suitable material is available and structurally suitable, to the exclusion of pre-cast or cast in situ concrete stormwater structures.
14. Where compaction of road layer works is required, it must be carried out using conventional compaction equipment (pedestrian rollers where possible). Compaction of small areas and in trenches may be carried out using hand stampers or hand compactors.
15. Consideration must be given to alternate design of gravity pipework to reduce depth of excavation.
16. Where there is an indication of local skills, e.g. bricklaying, structures should be designed to make use of such skills.

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| 17. There are appropriate designs for LI construction/maintenance of low-cost surfacing for roads. Refer to Appendix A of the Implementation Guidelines for further details. |
| 18. Are the items of work on projects checked for LI construction and maintenance suitability? |
| 19. Are there any statutory obligations required such as Environment Management Plans (EMP)? |
| 20. Are the site safety conditions not compromised by suggested LI construction and maintenance methods, and are the safety statutory requirements adequate for the number of labourers employed? |
| 21. Has the contractor provided the workers with sufficient and good quality hand tools? |
| 22. Have procedures been streamlined to ensure prompt payments to the contractor, and workers respectively? |
| 23. Are the supervisory staff suitably qualified? |
| 24. Green jobs: Principles of Green Jobs should be integrated in the design and implementation of various types of infrastructure. This includes materials and physical assets. |
| 25. Is it possible to integrate elements of sustainable livelihoods into the project? |

Source: 6.1 Design of Labour-Intensive Works, in EPWP Implementation Guidelines for Labour-Intensive Infrastructure Projects, DPWI/ILO, 2015.

Annex 3. Description of Areas Covered in The Ministerial Determination and Code of Good Practice

Area	Description
Selection and Participation	<ul style="list-style-type: none"> • Local community is informed and consulted about the establishment of EPWP. • Criteria to target the poorest of the poor: <ul style="list-style-type: none"> ○ Where head of household has less than primary school education ○ Household with less than one full-time person earning income ○ House where subsistence agriculture is the source of income • Provide as many people as possible with opportunity to participate • Distribute among the unemployed. • Forced labour is prohibited.
Payment	<ul style="list-style-type: none"> • At least the prescribed/prevaling minimum daily wage rate (R95.44 per day). Annual increase linked with inflation. • May be paid on number of tasks completed ('task-rated' workers) or paid on basis of time worked ('time-rated' workers). • If informed a day before that work will not take place the next day the worker is not entitled to payment. • Training allowance to be paid 100% when required to attend training. • Written particulars to be provided. • If a project is completed earlier than anticipated the worker should receive agreed remuneration for the period in full.
Discipline and Grievance	<ul style="list-style-type: none"> • Must have a disciplinary code and grievance procedure in place that apply to all. • Disciplinary Procedures must include a fair procedure: <ul style="list-style-type: none"> ○ Steps—verbal, written warning, dismissal ○ Examples of offences that warrants warnings ○ Examples of serious offences that warrants dismissal ○ Poor work performance—counseling/guidance, training • Grievance Procedures: <ul style="list-style-type: none"> ○ Sets out procedure for employee to follow • Contract of Employment for task-rated workers provided

Area	Description
Disciplinary Sanctions	<ul style="list-style-type: none"> • Verbal Warning: <ul style="list-style-type: none"> ○ May be issued for minor disciplinary offences. The purpose of the warning is to explain to the worker what the rules are, encourage the worker to comply with them and advise that if the conduct is repeated the employer may take more serious action ○ Only one verbal warning is required before moving to written warnings ○ Examples of minor offences: Late coming • Written Warning: <ul style="list-style-type: none"> ○ A written warning may be issued for repeated minor offences or for more serious offences ○ The employer should investigate the charge before issuing a warning. The worker should be asked to respond and explain his or her conduct ○ The warning should state the offence and the period for which the warning is valid. Generally, this should be six months, although warnings for more serious offences could be issued for a year or for the remainder of the workers employment on an EPWP ○ If the employer believes that the offence is serious, the warning should state that it is a final written warning and the repeat of the offence could lead to the worker's dismissal. Otherwise, two written warnings are suggested to dismissal

Area	Description
<p>Health and Safety</p>	<ul style="list-style-type: none"> • Every worker has the right to work in a working environment that is safe and without risk to his or her health. • The management and every employer (contractor) engaged in an EPWP are required to do everything that is reasonably practicable to ensure the health and safety of persons working on programme. • The management of an EPWP and each employer must: <ul style="list-style-type: none"> ○ Ensure that all workers are informed of any risks and dangers associated with their tasks ○ Inform and train workers about the precautions and steps that must be taken to avoid or minimise risks and dangers to them or others ○ Ensure all possible precautions and safety measures are in place to avoid risk and minimise dangers ○ Not permit workers to perform tasks for which they have not been trained ○ Provide workers with the necessary protective clothing such as hard hats, goggles, earplugs, boots and outer clothing required, as applicable to complete their tasks in safety. These must be supplied free of charge and must be maintained, by the worker, in a clean state and in working order for use ○ Provide first aid kits on site ○ Ensure that at least one person per site is trained to act as a first aid officer, and they are capable of providing first aid to injured or ill workers ○ Provide sufficient clean drinking water to all workers for the duration of the project ○ Ensure that adequate sanitation is available to workers and ensure all safety standards set are adhered to • Employers must take particular care to ensure workers with disability, pregnant workers or workers who are breastfeeding are not required to perform work that may endanger their health and safety or that of their child.

Area	Description
Compensation for Occupational Accidents and Diseases	<p>The Compensation for Occupational Injuries and Diseases Act 130 of 1993 (COIDA). Administrative obligations</p> <ul style="list-style-type: none"> • Every employer must: <ul style="list-style-type: none"> ○ Register with the Compensation Commissioner and cover all workers in the EPWP (this is done by submitting a completed W AS 2 form) ○ Notify the commissioner of any changes in particulars. ○ Keep a register of wages, time worked and payment (this is the same register described above) ○ Submit a return of wages paid each March ○ Pay assessments (contributions) as required by the commissioner <p>Obligations in respect of Accidents and Occupational Diseases</p> <ul style="list-style-type: none"> • Every employer must report to the Compensation Commissioner: <ul style="list-style-type: none"> ○ accidents within seven days (W CI 3 form); and ○ occupational diseases within 14 days (W CI 14 form) • An employer must pay a worker who is injured in an accident at work and who is unable to work 75% of their wages for a period of up to three months or until the end of the workers contract, whichever comes first. The Compensation Fund will refund the employer this money. • The family of a worker who is killed in an accident at work (or who dies from an occupational disease) is entitled to receive compensation in terms of the provisions of COIDA. An employer would help them to lodge their claim and, wherever possible provide employment for another member of the family. • A worker who is injured in an accident that is caused by the negligence of an employer is entitled to claim additional compensation in terms of section 56 of COIDA.
Normal Hours of Work	<p>An employer may not set tasks or hours of work that require a worker to work:</p> <ul style="list-style-type: none"> ○ More than 40 hours in any week, on more than five days in any week; and for more than eight hours on any day ○ An employer and worker may agree that a worker will work four days per week, the worker may then work up to 10 hours per day ○ A task-rated worker may not work more than 55 hours in any week to complete the tasks allocated (based on a 40 hour-week) to that worker

Area	Description
Sick Leave	<ul style="list-style-type: none"> • Only workers who work more than 24 hours per month have the right to claim sick pay in terms of this clause. • A worker who is unable to work on account of illness or injury is entitled to claim one day's paid sick leave for every full month that the worker has worked in terms of a contract. • A worker may accumulate a maximum of 12 days' sick leave in a year. • Before paying sick pay, an employer may require a worker to produce a certificate stating that the worker was unable to work on account of sickness or injury if the worker is: <ul style="list-style-type: none"> ○ Absent from work for more than two consecutive days; or ○ Absent from work on a more than two occasions in any eight-week period • A medical certificate must be issued and signed by a medical practitioner, a qualified nurse or a clinic staff member authorised to issue medical certificates indicating the duration and reason for incapacity. • A worker is not entitled to paid sick leave for a work-related injury or occupational disease for which the worker can claim compensation under the Compensation for Occupational Injuries and Diseases Act.
Maternity Leave	<ul style="list-style-type: none"> • A worker may take up to four consecutive months' unpaid maternity leave. • A worker who has a miscarriage during the third trimester of pregnancy or bears a stillborn child may take maternity leave for up to six weeks after the miscarriage or stillbirth.
Family Responsibility	<ul style="list-style-type: none"> • Workers who work for at least four days per week, are entitled to three days paid family responsibility leave each year in the following circumstances: <ul style="list-style-type: none"> ○ When the employee's child is born ○ When the employee's child is sick ○ In the event of death of: <ul style="list-style-type: none"> <input type="checkbox"/> the employee's spouse or life partner. <input type="checkbox"/> the employee's parent, adoptive parent, grandparent, child, adopted child, grandchild or sibling.

	Scope of Works	5.3.3	
	Demographic requirements		
	Code of Good Practice for EPWP; Applicable labour laws, health & safety and environmental requirements	5.4 Appendix J	
	Pricing Instructions on LI	5.6	
	SANS 1914-5 Recruitment of Local Labour		
	Generic LI Specification	5.5	

Consultant Declaration:

I..... (Name of Designer) hereby certify that the above-mentioned project has been appropriately designed; procurement documents and reporting templates prepared per the Code of Good Practice for EPWP and the latest edition of EPWP Guidelines for Implementation of Infrastructure Projects to optimise employment creation to achieve the stipulated minimum project labour intensity

Annex 5. Consultant’s Project Supervision Compliance Declaration

Project Name:	Project/ Contract No.:	Compliant? Yes/No
Consulting Firm:	Project Manager:	
Stage/ Element/ Process	Reference: EPWP Guidelines, DORA Frameworks & Business Process EPWP Clause	Page
Procedure and/or Activity	Compliance requirement	
Project Management	Records per EPWP Reporting System Registration of Project on Reporting System Compliance on: - Code of Good Practice for EPWP - LI items - Quality standards achieved Certification of Works: Payment Certificates include EPWP Report - Green Jobs Principles - Sustainable Livelihood Principles	7 Appendix H 5.4 Appendix J 5 3.3 3.2

The Consultant’s Declaration:

I..... (Name of supervising Consultant/Project Manager) certify that the project has been supervised; in compliance with all EPWP requirements in accordance with the Code of Good Practice for EPWP and the latest edition of EPWP Guidelines for Implementation of Infrastructure projects, to optimise employment creation to achieve the stipulated minimum project labour intensity