

Occupation - Civil Engineering Materials Tester



excellence in bituminous products

May 2014



QCTO Mandate

- QCTO Council members and Acting CEO appointed in Feb 2010, QCTO operational from 1 April 2010
 - ‘the QCTO is responsible for
 - establishing and maintaining occupational standards and qualifications’
 - the quality assurance of occupational standards and qualifications and learning in and for the workplace
 - designing and developing occupational standards and qualifications and submitting them to the SAQA for registration on the NQF
 - ensuring the quality of occupational standards and qualifications and learning in and for the workplace;”
- (SDA, 2008, Section 26H, 3)



Occupational Qualification & Curriculum

Occupational Purpose

Knowledge /
theory

Practical

Work experience

External, summative assessment

Occupational
Qualification



For each occupation QCTO will produce:

The Occupational **Qualifications** Document

An occupational qualification defines the learning required to be competent to practice an occupation or an occupational specialisation. (QCTO will submit this document to SAQA)

The Occupational **Curriculum** Document

The purpose of the occupational curriculum document is to enhance the quality and consistency of learning and of the internal assessment of each of the components of learning. National occupational curricula will be registered with QCTO.

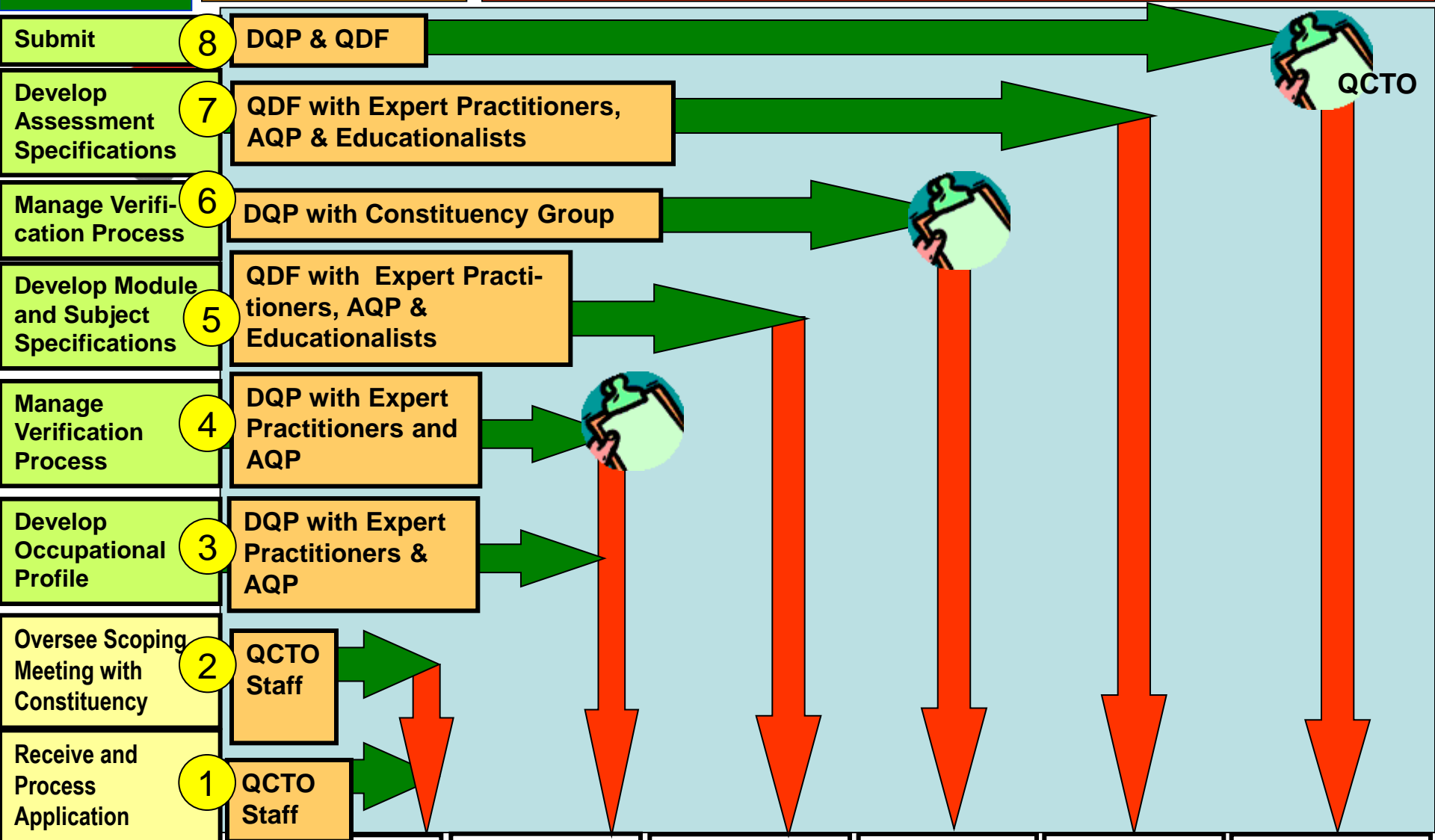
Occupational **Assessment Specifications** Document

All occupational qualifications will be assessed externally through an appropriate nationally standardised integrated summative assessment.

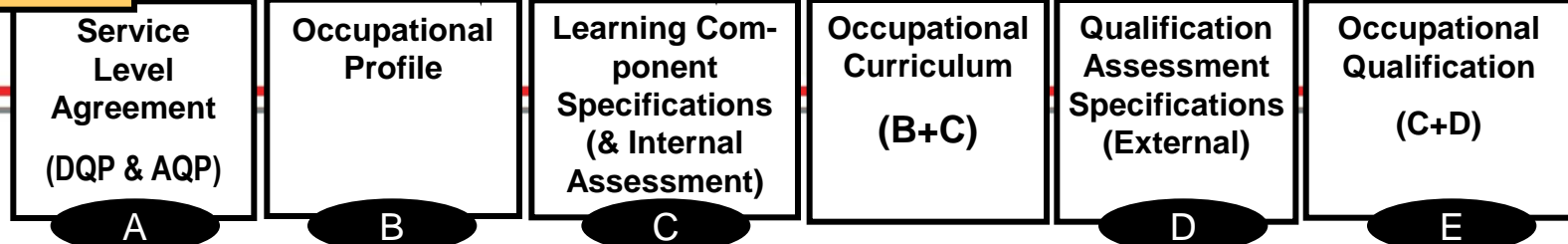
STEPS

RESPONSIBLE

QUALIFICATIONS DEVELOPMENT PROCESS



RESULTS



Curriculum Structure

Part Qualifications:

- Aggregates Tester
- Soils, gravels and crushed stone base materials Tester
- Bituminous binders Tester (base binders, modified binders, emulsions)
- Asphalt Tester
- Concrete Tester



Curriculum

- **Complete qualification of all modules over three years.**

Knowledge Module

- Basic mathematics and physical sciences
- Introduction to geology and engineering geology
- Introduction to construction materials
- Principles of Specifications
- Overview of laboratory quality assurance
- Health and safety
- Working with hazardous substances
- Environment
- Aggregates, soils, gravels and crushed stone base materials test methods,
- Bituminous binders test methods
- Asphalt test methods
- Concrete test methods



Practical Module

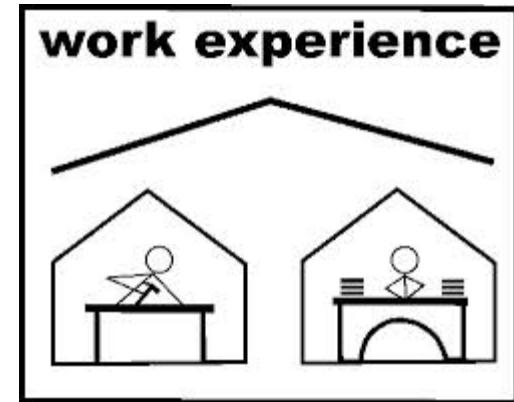
- Draw from storage and assemble testing apparatus for the relevant test
- Check compliance of apparatus to specifications of test method
- Execute laboratory and housekeeping activities
- Organise samples, data information and documentation,
- Conduct field sampling on aggregates
- Conduct sampling on soils, gravels and crushed stone,
- Conduct field testing on compacted and uncompacted fill and pavement layers
- Conduct sampling and field testing on bituminous binders
- Conduct sampling and field testing on asphalt,
- Conduct sampling and field testing on fresh and hardened concrete
- Extract a representative test sample
- Determine particle distribution and particle shape of aggregates
- Determine the density of aggregates
- Determine the soundness or durability characteristics of aggregate
- Determine material properties through chemical tests on aggregates
- Determine particle size distribution and Atterberg Limits of soils, gravels and crushed stone material
- Determine the density of soils, gravels and crushed stone material
- Determine compaction and strength characteristics of untreated and treated soils, gravels and crushed stone material
- Determine material properties through chemical tests on soils, gravels and crushed stone
- Determine the properties of bituminous base binders
- Determine the properties of modified binders
- Determine the properties of emulsions,
- Determine the properties of cutback bitumen,
- Prepare equipment, representative test samples and determine asphalt properties
- Conduct sampling and testing of bituminous slurry, NQF level
- Determine the properties of fresh and hardened concrete



Work Experience Module

Covers Processes and procedures:

- for conducting laboratory activities, housekeeping and organising data,
- of executing field sampling and on-site testing.
- of executing sample preparation activities and conducting physical testing, calculating and submitting results on :
 - aggregate materials.
 - soils, gravels and crushed stone base materials.
 - bituminous binders.
 - asphalt
 - concrete.



Pitched at 3 levels:

1. Observe and assist a qualified person in the conducting of laboratory activities, housekeeping and organising
2. Conduct laboratory activities, housekeeping and organise data under the direct supervision of a qualified person
3. Undertake all laboratory activities, housekeeping and organising data activities without assistance, but under supervision

Next Steps

- Review meeting 2nd of June
- Revise content based upon input at this meeting
- Submit to QCTO for Review
- QCTO submit to SAQA if satisfied that all criteria met



Please attend the meeting on 2nd June at SANRAL H/O : 09:00