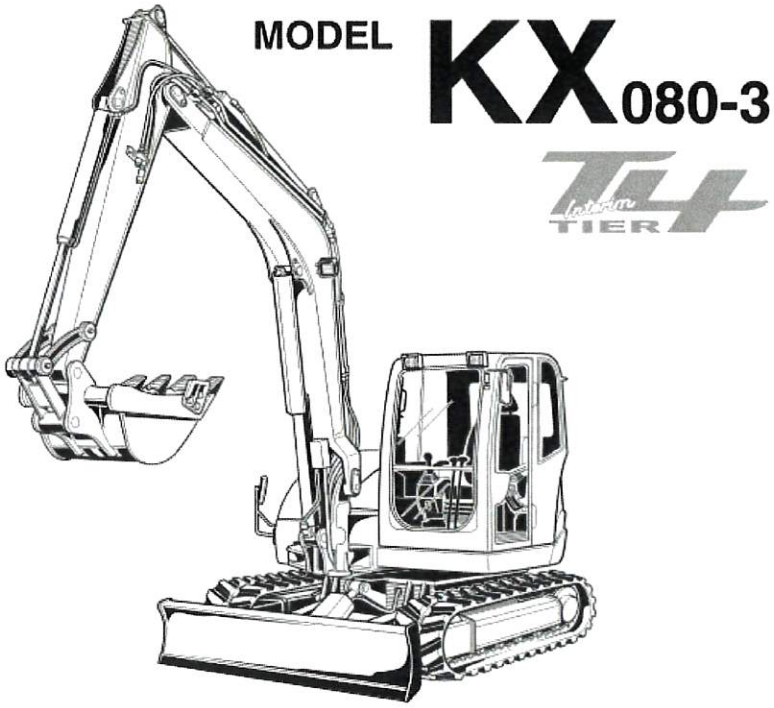
Kubota Tractor Australia Pty Ltd
25-29 Permas Way
TRUGANINA, 3029
Victoria Australia

HAZARD IDENTIFICATION and RISK ASSESSMENT

KX080-3



Assessment Date	2/10/2014
Revision	A
Assessment Location	KTA
Assessment Team	Alex Pedemont
Model Assessed	KX080-3
Serial Number	8DY4037

	Sample	Production
Type of Unit		✓

Section 1: **Machine Specifications**
Section 2: **Risk Assessment Tables**
Section 3: **Hazard Identification and Risk Assessment**
Section 4: **Required Risk Controls - Manufacturer**

Kubota Tractor Australia have performed this risk assessment on a standard unit for flat ground application. A thorough risk assessment, specific to their application, must be carried out by the end user before the operation of this machine. All operating processes and environments must be carefully considered.

This risk assessment is void unless all the risk controlls in section 4 have been completed and all the actions in section 3 J have been controlled.

PREPARED BY:	**RELEASED BY:**
Alex Pedemont	Benjamin Binns
Technical Engineer - Construction Date: 9/10/2014	Engineering Manager Date: 10/10/2014

Noise level testing - Tested by KTA to AS2012

	Noise Level dBA	Reference Standard
Average at operators ear	75.5	AS2012.2
Average at 7m	73.9	AS2012.1

			KUBOTA EXCAVATOR		
Model name			KX080-3		
Type			Cabin		
Operating weight (including operator's weight)		kg(lbs.)	Rubber tracks	Steel tracks (450 width)	Steel tracks (600 width)
			8280 (18254)	8330 (18364)	8460 (18475)
Engine	Type		Water cooled 4 cycle diesel engine with 4 cylinder		
	Model name		KUBOTA V3307DI-T		
	Total displacement	cc	3331		
	Engine power	SAE gross kW(Hp)	52.2 (70.0)		
		SAE net kW(Hp)	49.6 (66.5)		
	Rated speed	rpm	2000		
Performance	Unit swing speed	rpm	9.5		
	Travel speed	Fast km/h	4.9		
		Slow km/h	2.7		
	Ground pressure (With operator)	kPa (kgf/cm²)	36.0 (0.367)	36.2 (0.369)	27.6 (0.281)
	Climbing angle	%(deg)	*36 (20)		
	Angle in case of crossing slope	%(deg)	*27 (15)		
Dozer	Width x Height	mm	2200 x 500		
Boom swing angle		Left rad(deg)	1.22 (70)		
		Right rad(deg)	1.05 (60)		
Pressure connection for attachments	Max.displacement (Theoretical)	L/min	100		
	Max. pressure	Mpa (kgf/cm²)	20.6 (210)		
Fuel tank capacity		L	115		

NOTE :

- Above dimensions are based on the machine with KUBOTA original bucket and 2100 arm.
- Specifications subject to change without notice.

* With unloaded digging bucket.
* Firm compacted soil.
* Operators must exercise extra caution and follow instructions in the operator's manual.
* Worse condition or heavier attachment to the above will decrease climbing angle.

2. Risk Assessment Tables

Likelihood Table

	Category	Description
1	Rare	Cannot imagine that this could occur (over 5 years)
2	Unlikely	Incident is possible, but unlikely to occur (2 years - 5 years)
3	Slight	Incident is possible to occur (1 year - 2 years)
4	Likely	Incident could occur at some time (1 month - 1 year)
5	Almost Certain	Incident will occur at some time (0 - 1 month)

Consequences Table

	Category	Description
1	Negligible	Effects unlikely to last until the next day.
2	Minor	Likely to affect employee the next day.
3	Moderate	Injury needs formal medical treatment.
4	Major	Injury requiring extensive medical treatment and/or hospitalisation.
5	Severe	Injury resulting in death or permanent incapacity.

Risk Score Calculator

		Consequences				
		Negligible	Minor	Moderate	Major	Severe
Likelihood	Almost Certain	Medium	High	Very High	Very High	Very High
	Likely	Medium	Medium	High	Very High	Very High
	Slight	Low	Medium	High	High	Very High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

Risk Priority Table

	Priority	Action
Very High	1	Immediate action required
High	2	Implement short term safety controls immediately
Medium	3	Short term safety controls implemented to minimise risk of injury
Low	4	Monitor activity

3. Hazard Identification and Risk Assessment (Risks associated with handling, operating, cleaning, maintaining and transport of the unit within fair and reasonable circumstances)

	A	B	C	D	E	F	G	H	J
	Hazard Identification			Risk Control		Residual Risk			
	Hazard Source	Need to access hazard	Potential Consequence	Current Controls	Hierarchy of Control	LH	Con	Risk	Action Required
1	Airborne dust.	Operator.	Breathing difficulties.	Sealed cabin.	4. Isolation	2. Unlikely	1. Negligible	4. Low	
2	Attachment component disintegrating under operation.	Operator required to be seated on the machine to operate. Machine may be required to operate in public areas around bystanders.	Stabbing or puncture.	Operator's manual provides SOP and defines the exclusion zone around the hazard area. Operator driving position is isolated by enclosed cabin structure.	4. Isolation	2. Unlikely	2. Minor	4. Low	
3	Attachment impacting the cabin.	Operator situated in cab whilst operating with attachments.	Crushing of operator by attachment.	Warning decal informs the operator to keep attachments away from the cabin and machine.	5. Administration	1. Rare	3. Moderate	4. Low	
4	Blind spots at rear and side of the unit.	Machine may be required to operate in public areas around bystanders or around obstacles and structures.	Impact or crushing.	The operator's manual provides SOP. The machine is fitted with side and rear mirrors reducing the blind spots. An audible travel alarm and horn warn bystanders of the machines movement.	3. Engineering	2. Unlikely	3. Moderate	3. Medium	The manager of the machine is responsible to be fit a rotating beacon, if required by local regulation / work site requirements.
5	Burns or abrasion by moving parts.	Operator.	Burns.	Operator zone free of moving parts.	3. Engineering	1. Rare	2. Minor	4. Low	
6	Cabin door closes against body of the machine.	Operator access to cabin and driving position.	Pinch/crush fingers or hand.	Latch to keep door in open position reduces likelihood of the door unintentionally closing.	3. Engineering	2. Unlikely	2. Minor	4. Low	
7	Manually changing attachments.	Operator and maintenance personnel required to connect and remove attachments.	Pinching fingers / crushing hands.	Caution decal informs the operator to read the relevant operators and safety manual of the attachment when not using a Kubota specified bucket.	5. Administration	1. Rare	3. Moderate	4. Low	
8	Closing sliding front windscreen.	Operator required to manually close window.	Pinch/crush fingers or hand.	Locking mechanism requires operator to use both hands to release the latch removing their hands from the hazard zone.	3. Engineering	1. Rare	2. Minor	4. Low	
9	Constrained body posture.	Operator.	Bone and muscle injuries.	SOP, ergonomic suspension seat and arm rests.	3. Engineering	2. Unlikely	2. Minor	4. Low	
10	Contact with hot surfaces.	Operator and maintenance personnel required to conduct daily inspection, maintenance and troubleshooting.	Burns.	The operator's manual provides SOP, Hot surfaces are isolated by lockable hood. Protective guards and safety decals warn the operator and maintenance person of the hot surfaces.	3. Engineering	2. Unlikely	2. Minor	4. Low	
11	Engine exhaust.	Operator, maintenance personnel.	Exposure to toxic gas/ asphyxiation/death.	Exhaust system points away from operator platform. Operator's manual instructs operator not to operate the machine in enclosed spaces and warns of asphyxiation.	3. Engineering	1. Rare	3. Moderate	4. Low	
12	Excessive noise.	Operator required to be seated on the machine to operate.	Hearing damage.	Cabin enclosure limits noise levels to an acceptable level.	3. Engineering	1. Rare	1. Negligible	4. Low	

	Hazard Identification			Risk Control		Residual Risk			
	Hazard Source	Need to access hazard	Potential Consequence	Current Controls	Hierarchy of Control	LH	Con	Risk	Action Required
13	Extremely hot ambient temperatures.	Operator required to be seated on the machine to operate.	Dehydration.	Machine is fitted with an air conditioned cabin reducing the likelihood of dehydration.	3. Engineering	1. Rare	2. Minor	4. Low	
14	Extremely hot radiator fluid.	Operator or maintenance personnel required to conduct daily inspection, maintenance and troubleshooting.	Burns or Scalding.	The operator's manual provides SOP, The radiator is isolated by a lockable hood. A safety decal above the radiator cap warns the operator and maintenance person of the hot surface.	3. Engineering	1. Rare	3. Moderate	4. Low	
15	Failure of hydraulics to semi automatic quick coupler causing unintentional release of bucket attachment.	Operator and maintenance personnel required to use semi automatic quick coupler to switch between attachments. Machine may be required to operate in public area with bystanders.	Crushing/impact/death.	Operator required to follow SOP. Safety pin must be installed to prevent quick coupler from unintentionally detaching the attachment. Quick coupler must be regularly inspected and maintained to ensure correct working order.	5. Administration	2. Unlikely	4. Major	3. Medium	The manager of the machine is required to comply with the appropriate legislation and work site requirements regarding quick hitches.
16	Falling objects.	Operator required to be seated on the machine to operate.	Objects striking operator.	Certified OPG (Top guard level I) protects operator when seated in the driving position.	3. Engineering	2. Unlikely	1. Negligible	4. Low	
17	Fire or explosion caused by ignition of fuel supply.	Operator, maintenance personnel or bystander.	Burns.	Fuel tank sealed with lock, fill point away from hot surfaces and safety decal warns of flammable substance.	3. Engineering	2. Unlikely	3. Moderate	3. Medium	The manager of the machine is responsible to fit a spark arrestor (complying to AS1019) if local regulation specifies. The manager of the machine is responsible to fit a fire extinguisher (complying to AS1841) if required by local regulation / worksite requirements.
18	High pressure hydraulic oil.	Operator and maintenance personnel required to complete daily inspections, maintenance and removal of components.	Oil injection.	Hoses are manufactured to ISO standard and wrapped in spiral wrap reducing the likelihood of premature wear. Operator's manual provides SOP for identifying oil leaks.	3. Engineering	1. Rare	3. Moderate	4. Low	
19	Hydraulic accumulator.	Operator and maintenance personnel required to conduct daily inspections and maintenance including removal of components.	Oil injection.	The operator's manual provides SOP for depressurizing the hydraulic system. The accumulator is isolated by a lockable service hood during normal operation.	3. Engineering	1. Rare	3. Moderate	4. Low	
20	Hydraulic failure of boom cylinder hydraulics.	None.	Crush between boom and attachment, machine or ground.	Antidrop valve fitted to boom cylinder locks the boom in place in the event of hydraulic failure.	3. Engineering	1. Rare	3. Moderate	4. Low	
21	Instability from overloading.	Operator required to be seated on the machine to operate. Machine may be required to operate in public area with bystanders.	Crushing/impact/death.	Operator is protected by a ISO 12117-2 2008 certified ROPS and OPG (top guard level 1) which meets requirements of OSHA 1926 - 1003 / ISO 10262 1998. A SAE J386 certified seatbelt ensures the operator remains in a safe zone of clearance in the event of a rollover. The operator's manual provides SOP. A lifting chart decal in cabin notifies the operator of the lifting capacity of the machine. Safety decals warn bystanders should not enter the exclusion zone during operation. Overload warning switch warns the operator if a weight greater than what the machine is designed for is lifted.	3. Engineering	2. Unlikely	2. Minor	4. Low	

	Hazard Identification			Risk Control		Residual Risk			
	Hazard Source	Need to access hazard	Potential Consequence	Current Controls	Hierarchy of Control	LH	Con	Risk	Action Required
22	Instability on slopes.	Operator required to be seated on the machine to operate.	Crushing/impact/death.	Operator is protected by a ISO 12117-2 2008 certified ROPS and OPG (top guard level 1) which meets requirements of OSHA 1926 - 1003 / ISO 10262 1998. An SAE J 386 certified seatbelt ensures the operator remains in the safe zone of clearance in the event of a roll over. The operator manual provides SOP for working on slopes.	3. Engineering	2. Unlikely	2. Minor	4. Low	
23	Left/right swing operation of the main boom moves towards the cabin.	None.	Crush between boom and cabin.	Hydraulic lock lever unloads control pressure and applies parking brake reducing the likelihood of operation of the machine without the operator in the driving position. The operator's manual instructs the operator not to touch the hydraulic controls while standing outside the cabin. Boom swivel pedal has a hinged cover plate to prevent unintentional boom swing when not in use.	3. Engineering	1. Rare	3. Moderate	4. Low	
24	Loading/unloading machine from truck or trailer.	Operator required to be seated on the machine to operate.	Crushing/fall from trailer.	Operator's manual provides SOP for loading and unloading the machine.	5. Administration	2. Unlikely	2. Minor	4. Low	
25	Machine mobility.	Machine may be required to operate in public area with bystanders.	Collision.	The machine is fitted with a travel alarm and horn to warn bystanders of the machines movement. Front, rear and side mirrors reduce bind spots around the machine.	3. Engineering	2. Unlikely	2. Minor	4. Low	
26	Mounting/dismounting.	Operator required to access / egress driving position.	Slip, trip or fall.	Non-slip surface (door tread and rubber mat) reduces the likelihood of slipping. Hand rail provides the operator three points of contact reducing the likelihood of falling. Caution decal warns the operator of the risk of falling and outlines correct mount/dismount procedure.	3. Engineering	2. Unlikely	2. Minor	4. Low	
27	Opening sliding front windscreen.	Operator required to open the front window.	Impact to operators head.	Window latch and safety decal warns the operator of risk of injury if window is not locked in the fully open position.	3. Engineering	2. Unlikely	2. Minor	4. Low	
28	Overhead/underground power lines.	Operator required to be seated on the machine to operate.	Electrocution/death.	The operator's manual provides SOP. Danger decal warns the operator of the risk of electrocution from contacting overhead electrical conductors. Caution decal informs the operator to check work area for underground lines and cables before starting operation.	5. Administration	1. Rare	3. Moderate	4. Low	The manager of the machine is responsible to fit a Dial before you dig decal if required by local regulation / worksite requirements.
29	Rear engine access hood closes against the body of the machine.	Operator and maintenance personnel need to access under hood to conduct daily checks and maintenance.	Pinch finger or hand.	Gas Strut supports the weight of the hood to prevent unintentional closing.	3. Engineering	2. Unlikely	2. Minor	4. Low	
30	Restoring fluid levels.	Operator and maintenance personnel required to conduct daily inspections and replenish fluid as required.	Skin/eye irritation.	SOP, easy to access fill points.	3. Engineering	2. Unlikely	2. Minor	4. Low	

	Hazard Identification			Risk Control		Residual Risk			
	Hazard Source	Need to access hazard	Potential Consequence	Current Controls	Hierarchy of Control	LH	Con	Risk	Action Required
31	Rotating engine belt and fan.	Operator and maintenance personnel access for service and maintenance.	Crush/severe hand.	Rotating components are isolated by a lockable hood during normal operation. Caution decal warns the operator and maintenance person of risk if engine is not shut off before opening. Decal on radiator guard warns of rotating elements.	4. Isolation	1. Rare	3. Moderate	4. Low	
32	Side hydraulic access hoods close against the body of the machine.	Operator and maintenance personnel need to access under hood to conduct daily inspection and maintenance.	Pinch finger or hand.	Latch supports weight of the hood and prevents unintentional closing reducing the likelihood and consequence of pinching.	3. Engineering	2. Unlikely	2. Minor	4. Low	
33	Unintentional or sudden machine movement.	Operator and maintenance personnel required to conduct daily inspections and maintenance.	Crushing/impact.	The operator's manual provides SOP before beginning any daily checks or maintenance. Hydraulic locking mechanism isolates hydraulic and applies parking brake. Caution decal informs the operator to lock control lever before leaving compartment.	3. Engineering	2. Unlikely	2. Minor	4. Low	

4. Required Risk Controls (Controls required to be completed by the Dealer prior to the sale of the machine into Australia)

	A	B	C	D	E	F	G	H	J
	Hazard Identification			Risk Control		Residual Risk			
	Hazard Source	Need to access hazard	Potential Consequence	Current Controls	Hierarchy of Control	LH	Con	Risk	Action Required
1	Blind spots at rear and side of the unit.	Machine may be required to operate in public areas around bystanders or around obstacles and structures.	Impact or crushing.	The operator's manual provides SOP. The machine is fitted with side and rear mirrors reducing the blind spots. An audible travel alarm and horn warn bystanders of the machines movement.	3. Engineering	2. Unlikely	3. Moderate	3. Medium	The manager of the machine is responsible to be fit a rotating beacon, if required by local regulation / work site requirements.
2	Failure of hydraulics to semi automatic quick coupler causing unintentional release of bucket attachment.	Operator and maintenance personnel required to use semi automatic quick coupler to switch between attachments. Machine may be required to operate in public area with bystanders.	Crushing/impact/death.	Operator required to follow SOP. Safety pin must be installed to prevent quick coupler from unintentionally detaching the attachment. Quick coupler must be regularly inspected and maintained to ensure correct working order.	5. Administration	2. Unlikely	4. Major	3. Medium	The manager of the machine is required to comply with the appropriate legislation and work site requirements regarding quick hitches.
3	Fire or explosion caused by ignition of fuel supply.	Operator, maintenance personnel or bystander.	Burns.	Fuel tank sealed with lock, fill point away from hot surfaces and safety decal warns of flammable substance.	3. Engineering	2. Unlikely	3. Moderate	3. Medium	The manager of the machine is responsible to fit a spark arrestor (complying to AS1019) if local regulation specifies. The manager of the machine is responsible to fit a fire extinguisher (complying to AS1841) if required by local regulation / worksite requirements.
4	Overhead/underground power lines.	Operator required to be seated on the machine to operate.	Electrocution/death.	The operator's manual provides SOP. Danger decal warns the operator of the risk of electrocution from contacting overhead electrical conductors. Caution decal informs the operator to check work area for underground lines and cables before starting operation.	5. Administration	1. Rare	3. Moderate	4. Low	The manager of the machine is responsible to fit a Dial before you dig decal if required by local regulation / worksite requirements.